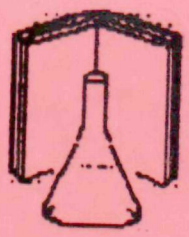

Polychlorinated Biphenyls: A Bibliography of Regulatory Action and EPA Related Research

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Polychlorinated Biphenyls: A Bibliography of Regulatory Actions and EPA Related Research

ABOUT THIS BIBLIOGRAPHY

This document has been prepared to help interested persons locate EPA information on Polychlorinated Biphenyls (PCBs).

Polychlorinated Biphenyls: A Bibliography of Regulatory Actions and EPA Related Research is divided into three sections:

- Federal Register Notices - arranged chronologically beginning with the most recent notice
- EPA reports in the Government Printing Office (GPO) Database - arranged alphabetically by report title
- EPA reports in the National Technical Information Service (NTIS) Database - arranged alphabetically by report title

Users of this document are advised that this is not intended as an all inclusive bibliography of published literature on PCBs. It is limited to Federal Register Notices, and to reports which have been funded in whole or in part by EPA.

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These citations refer to Federal Register Notices.
The complete text of these Federal Register Notices
is located in the Federal Register issue cited.

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ISSUE	FEDERAL REGISTER, VOL. 51, NO. 080, P. 15688
DATE	April 25, 1986
SUBJECT	Notice: EPA & NY State Dept of Environmental Conservation to prepare joint supplemental EIS on Hudson River PCB Reclamation Demonstration Project.

ISSUE	FEDERAL REGISTER, VOL. 51, NO. 036, P. 6423
DATE	February 24, 1986
SUBJECT	Proposed: 40 CFR Part 261 EPA responds to petitions to prevent construction of PCB disposal facility in Henderson KY, at Citizens for Healthy Progress & Valley Watc request; text thru p.6429. Comment deadline Apr 25 1986. Doc.No OPTS-211017. CONTACT: Edward Klein (202) 554-1404.

ISSUE	FEDERAL REGISTER, VOL. 50, NO. 137, P. 29170
DATE	July 17, 1985
SUBJECT	Rule: 40 CFR Part 761 EPA establishes addtl restrictions & conditions on use of polychlorinated biphenyl (PCB) transformers to prohibit use of higher secondary voltag network PCB transformers in or near commercial bldgs & require installatio of enhanced electrical protection on lower secondary voltage network PC transformers. Rule also requires owners of PCB transformers involved i fire-related accidents to immediately notify Natl Response Center & take measures to prevent potential PCB releases; text thru p.29201. NPRM Oct 1 1984, 49 FR 39966. Effective Aug 16 1985. Doc.No. OPTS-62035D. CONTACT: Edward Klein (202) 554-1404.

ISSUE: FEDERAL REGISTER, VOL. 50, NO. 065, P. 13392

DATE: April 4, 1985

SUBJECT: Proposed: 40 CFR Part 761
EPA incorporates certain American Society for Testing & Materials (ASTM) methods in Polychlorinated Biphenyl (PCB) regs, & proposes using revised methods to meet PCB testing standards. Comment deadline May 6 1985. CONTACT: Edward Klein (202) 554-1404.

ISSUE: FEDERAL REGISTER, VOL. 50, NO. 027, P. 5401

DATE: February 8, 1985

SUBJECT: Proposed: 40 CFR Part 761
EPA extends until Feb 11 1985 comment period on proposal (Oct 11 1984, 49 FR 39966) to address risks posed by fire-related events involving electrical transformers containing polychlorinated biphenyls (PCBs). Extension at request of Chemical Mfgrs Assn et al, based on Jan 14-16 & 29 1985 hearings. Doc.No. OPTS-62035C. CONTACT: Edward Klein (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 230, P. 46770

DATE November 28, 1984

SUBJECT Proposed: 40 CFR Part 761
EPA reschedules to Jan 14 1985 hearing on proposal (seen Oct 11 1984, 49 FR 39966) to address risks posed by fire-related events involving electrical transformers containing polychlorinated biphenyls (PCBs). Hearing to be held at 401 M Street SW, Wash DC. Doc.No. OPTS-62035B. CONTACT: Edward Klein (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 218, P. 46634

DATE November 8, 1984

SUBJECT Rule: 40 CFR Part 761
EPA revises TSCA Sec 6(e)(2)(C) prohibition against the mfgr, processing or distribution of polychlorinated biphenyls (PCBs) in other than a "totally enclosed manner", to delete the definition of "significant exposure", modify the definition of "totally enclosed manner", and to present current EPA approach to assessing PCB exposures. EPA believes "there is a point at which the risk posed by exposure to certain levels of PCBs becomes insignificant" and that the concept of totally enclosed use "has only limited applicability". NPRM July 23 1984, 49 FR 29625. Effective Dec 10 1984. Doc.No. OPTS-62039A. CONTACT: Edward Klein (202) 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 49, NO. 198, P. 39966

DATE — October 11, 1984

SUBJECT — Proposed: 40 CFR Part 761
EPA proposes amdt of its Aug 1982 use authorization order for use of PCBs (polychlorinated biphenyls) in electric transformers to require (1) immediate registration of PCB units with fire dept jurisdictions, (2) unit exterior marking, (3) removal of stored combustibles from transformer locations, (4) registration of units with bldg owners, (5) installation of addtl protective devices in high secondary (low side) voltage systems, and (6) isolation of transformers from bldg ventilation equipment, ductwork and construction openings. ANPRM Mar 23 1984, 49 FR 11070. Comment deadline Dec 10 1984; hearing, Dec 26, Wash DC, if requested. Doc.No. OPTS-62035A. CONTACT: Edward Klein (202) 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 49, NO. 183, P. 36648

DATE — September 19, 1984

SUBJECT — Rule: 40 CFR Part 761
EPA incorporates by reference certain ASTM (American Society for Testing & Materials) test methods in the PCB (polychlorinated biphenyl) regs; "ASTM D 1796-68" has been revised by ASTM. NPRM June 1 1984, 49 FR 22836. Effective Sept 19 1984. Doc.No. OPTS-62037A. CONTACT: Edward Klein (202) 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 49, NO. 142, P. 29625

DATE — July 23, 1984

SUBJECT — Proposed: 40 CFR Part 761
EPA proposes to amend the PCB Rule (May 31 1979, 44 FR 31514) to delete the definition of "significant exposure", to modify the definition of "totally enclosed manner" re mfgr of polychlorinated biphenyls (PCBs), and to present the EPA current framework for assessment of PCB exposure. Comment deadline Aug 22 1984; hearing Sept 6 1984, Wash DC, if requested. Doc.No. OPTS-62039; TSH-FRL 2600-4. CONTACT: Edward Klein (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 139, P. 29066

DATE July 18, 1984

SUBJECT Rule: 40 CFR Part 761
EPA makes technical amdts to its American Society for Testing Materials (ASTM) test methods cited in the TSCA polychlorinated biphenyl (PCB) regs; table. Effective Aug 1 1984. Doc.No. OPTS-62042; FRL 2621-8. CONTACT: Edward Klein (202) 544-1404.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 133, P. 28203

DATE July 10, 1984

SUBJECT Proposed: 40 CFR Part 761
EPA solicits addtl comments on 49 petitions for exemption to mfgr, process and distribute in commerce substances or mixtures inadvertently contaminated with 50 ppm or greater PCBs (seen Nov 1 1983, 48 FR 50486); proposal also solicits comments on Ward Transformer Co petition for exemption to buy and sell used PCB-contaminated transformers. Comments on exemption petitions due Oct 1 1984; on Ward Transformer Co petition, Aug 23; hearing Sept 6 1984. See related Rule today, p.28154. Doc.No. OPTS-66008B; TSH-FRL 2584-7. CONTACT: Edward Klein (202) 544-1404.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 133, P. 28154

DATE July 10, 1984

SUBJECT Rule: 40 CFR Part 761
EPA responds to 109 petitions for exemption from prohibition against mfgr, processing & distribution in commerce of polychlorinated biphenyls (PCBs) by granting 59, granting in part & denying in part one, denying 49 and dismissing one exemption petition. Effective Aug 23 1984. Doc.No. OPTS-66008A; TSH-FRL 2585-4. SEE ALSO amends TSCA exclusionary rule (Oct 21 1982, 47 FR 46980) to exclude addtl processes from regulation, authorize use of PCBs in heat transfer & hydraulic systems, and other (OPTS-62032A; TSH-FRL 2587-1), p.28172; amends PCB Ban rule (May 3 1979, 44 FR 31514) to authorize use as mounting media in microscopy, as immersion oils in low flourescence microscopy, and other (OPTS-62031A; TSH-FRL 2590-2), p.28193.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 120, P. 25239

DATE June 20, 1984

SUBJECT Rule: 40 CFR Part 761
EPA amends TSCA definitions re PCBs (polychlorinated biphenyls) to alphabetize definitions, remove paragraph designations, and change the cross references in Subchapter R to reflect amdt. Effective June 20 1984. Doc.No. OPTS-62041; TSH-FRL 2611-5. CONTACT: John Richards (202) 382-3826.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 107, P. 22836

DATE June 1, 1984

SUBJECT Proposed: 40 CFR Part 761
EPA proposes that revised American Society for Testing and Materials (ASTM) test methods be used to meet particular Polychlorinated Biphenyl (PCB) testing rqmts. Comment deadline July 2 1984. Doc.No. OPTS-62037; TSH-FRL 2566-6. CONTACT: Jack McCarthy (202) 544-1404.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 82, P. 18036

DATE April 26, 1984

SUBJECT Notice: EPA to provide Midwest Research Institute access to certain confidential business info during performance of contract to review, test & audit proposed alternative PCB destruction methods submitted by potential permittees under TSCA section 6. Effective May 7 1984. Doc.No. OPTS-140049; FRL 2574-6.

ISSUE FEDERAL REGISTER, VOL. 49, NO. 58, P. 11070

DATE March 23, 1984

SUBJECT Proposed: 40 CFR Part 761
EPA solicits data on risks posed by fires involving electrical transformsers that contain polychlorinated biphenyls (PCBs), pursuant to fire May 1983, San Francisco CA, and Sept 1983, Chicago IL, attributed to PCB-transformers. EPA authorization of indefinite use of such transformers, seen at 47 FR 37342 (Aug 25 1982), did not consider fire

risks; data received in this ANPRM will determine if further control measures should be proposed; text thru p.11083. Comment deadline May 22 1984. Doc.No. OPTS 62035; TSH-FRL 2528-7. CONTACT: Jack McCarthy (202) 544-1404.

ISSUE — FEDERAL REGISTER, VOL. 49, NO. 54, P. 10133

DATE — March 19, 1984

SUBJECT — Proposed: 40 CFR Part 761
EPA withdraws proposed rule to restrict use of polychlorinated biphenyls (PCBs) at agricultural pesticide and fertilizer facilities; this area of PCB use has been addressed in regs re PCB use in electrical equipment (47 FR 37342, Aug 25 1982). See proposal at 45 FR 30989 (May 9 1980). Doc.No. OPTS-62003D; TSH-FRL 2545-6. CONTACT: Jack McCarthy (202) 544-1404.

ISSUE — FEDERAL REGISTER, VOL. 49, NO. 9, P. 1697

DATE — January 13, 1984

SUBJECT — Rule: 40 CFR Part 761
EPA denies Cannelton Industries petition to amend polychlorinated biphenyl (PCB) regs to provide EPA Regional Administrators authority to approve alternative disposal methods for non-liquid PCBs, including contaminated soil (specifically, PCB-soaked rock, gravel and other mining debris resulting from a transformer spill in Cannelton's No. 105 mine in Kanawha Cnty, West Virginia). Cannelton had argued that leaving the PCBs in the sealed mine would satisfy TSCA disposal rqmts; EPA disagrees. Doc.No.OPTS-211011. CONTACT: Jack McCarthy (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 48, NO. 237, P. 55076

DATE December 8, 1983

SUBJECT Proposed: 40 CFR Part 761
EPA proposes to exclude addtl processing involving mfgr & use of polychlorinated biphenyls (PCBs) from TSCA regulation. Exclusion of PCBs generated in closed and controlled waste manufacturing processes granted Oct 21 1982 (47 FR 46980). EPA also defers action on 50 exemption petitions re PCBs, and proposes to authorize use of PCBs in heat transfer and hydraulic systems at concentrations less than 50ppm. Hearing scheduled, Feb 21-22 1984, if requested. Comment deadline Feb 6 1984. See list of 70 processes with "high potential" for PCB generation, p.55080; continued discussion through p.55098. Doc.No. OPTS-62032. CONTACT: Jack McCarthy (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 48, NO. 223, P. 52402

DATE November 17, 1983

SUBJECT Proposed: 40 CFR Part 761
EPA proposes to amend final rule published May 31 1979 (44 FR 31514) concerning the use of polychlorinated biphenyls (PCB) in a non-totally enclosed manner in hydraulic systems, heat transfer systems, in microscopy as a mounting medium, and in small quantities for R&D until July 1 1984. The Agency proposes indefinite authorization of the use of PCBs as a mounting medium in art & historic conservation, and authorizes indefinitely the use of small quantities of the same for use in R&D. Hearing tentatively scheduled for Jan 16 1984, Wash DC. Comment deadline Jan 3 1984. Doc.No. OPTS 62031. CONTACT: Jack McCarthy (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 48, NO. 223, P. 52304

DATE November 17, 1983

SUBJECT Rule: 40 CFR Part 761
EPA announces policy on compliance and enforcement of storage for disposal regs under the TSCA polychlorinated biphenyl (PCB) rule. The regs prescribe a 1 year time limit on storage of PCB articles or containers prior to their eventual disposal and will allocate liability for failure to meet the deadline between the waste generator and disposer. See final rule published May 31 1979 (44 FR 31514). Doc.No. OPTS-62033. CONTACT: Jack McCarthy (202) 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 212. P. 50486

DATE — November 1, 1983

SUBJECT — Proposed: 40 CFR Part 761
EPA addresses 172 pending individual & class petitions for exemption from the prohibition against the manufacture, processing, & distribution in commerce of polychlorinated biphenyls (PCB). The Agency identifies 49 petitions which it intends to grant, 73 which it proposes to deny, & 50 on which it is deffering action. Hearings tentatively scheduled for Jan 16 1984 in Washington DC, Chicago IL, & San Francisco CA. Comment deadline Jan 3 1984. Doc.No. OPTS-66008. CONTACT: Jack McCarthy (202) 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 91, P. 20984

DATE — May 10, 1983

SUBJECT — Notice: EPA announces avialability of report entitled "Monitoring Results & Environmental Impact on the Gulf of Mexico Incineration Site from the Incineration of PCB's under Research Permit HQ 81-002. April 1983". Discussion refs to two trial burnings aboard the incinerator vessel Vulcanus I. Locations of report availability listed. CONTACT: Alan Rubin (202) 245-3030.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 77, P. 16884

DATE — April 20, 1983

SUBJECT — Rule: 40 CFR Part 761
EPA denies MET Electrical Testing Company petition to amend polychlorinated biphenyl (PCB) regs to create new classification for transformers that contain less than 250ppm PCBs, and to change definition of in-service use to eliminate rqmt that the temperature of the dielectric fluid be raised to 50 degrees Centigrade. Doc.No. OPTS-211009. CONTACT: Jack McCarthy (800) 424-9065.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 62, P. 13181

DATE — March 30, 1983

SUBJECT — Rule: 40 CFR Part 761
EPA procedural rule gives Asst Administrator for Pesticides & Toxic Substances authority to approve certain PCB disposal facilities which previously have required approval from each Regional Administrator. Effective Apr 29 1983. Doc.No. OPTS-62028.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 35, P. 7299

DATE — February 18, 1983

SUBJECT — Notice: EPA TSCA premanufacture notices with comment deadline of Apr 7 1983: PMN83-462, confidential, for succinate ester amide; PMN83-463, confidential, for amino aliphatic propoxylate; PMN83-464, confidential, for sodium sulfosuccinate of ethoxylated substituted phenol for open use; PMN83-465, confidential, for metal polyisobutenylsuccinate; PMN83-466, confidential, for ether-olefin-sulfone terpolymer for contained use; PMN83-467, confidential, for alkyl cyclohexane carboxakdehyde; PMN83-468, Franklin Inst Research Lab, for complex sodium polyethylene glycolate salt, for industrial dechlorination of PCBs or other halogenated organics. Doc.No. OPTS-51454.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 35, P. 7172

DATE — February 18, 1983

SUBJECT — Rule: 40 CFR Part 761
EPA issues stmt of policy re determining exposure risk to food & feed of use of PCBs in electrical equipment. See original rule at 47 FR 37342, Aug 25 1982. Effective Feb 18 1983. Doc.No. OPTS-62015E.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 27, P. 5729

DATE — February 8, 1983

SUBJECT — Rule: 40 CFR Part 761
EPA incorporates certain ASTM revised test methods in PCB regs. NPRM May 21 1982, 47 FR 22123. Effective Feb 8 1983. Doc.No. OPTS-62024B. CONTACT: Chris Tirpak, (800) 424-9065.

ISSUE — FEDERAL REGISTER, VOL. 48, NO. 22, P. 4467

DATE — February 1, 1983

SUBJECT — Rule: 40 CFR Part 761
EPA corrects error of rule (47 FR 46980, Oct 21 1982) to state that controlled wastes incinerated are limited in polychlorinated biphenyls (PCBs) to 500 ppm in high-efficiency boilers, & 50 ppm in RCRA-approved incinerators. Effective Feb 1 1983. OPTS-62017D, TSH-FRL2295-2. CONTACT: Chris Tirpak (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 48, NO. 22, P. 4467

DATE February 1, 1983

SUBJECT Rule: 40 CFR Part 761
EPA corrects error of rule (47 FR 46980, Oct 21 1982) to state that controlled wastes incinerated are limited in polychlorinated biphenyls (PCBs) to 500 ppm in high-efficiency boilers, & 50 ppm in RCRA-approved incinerators. Effective Feb 1 1983. OPTS-62017D, TSH-FRL2295-2. CONTACT: Chris Tirpak (202) 554-1404.

ISSUE FEDERAL REGISTER, VOL. 48, NO. 15, P. 2804

DATE January 21, 1983

SUBJECT Proposed: 40 CFR Part 430
EPA extends comment period to Feb 16 1983 for proposed reg to limit discharge of PCBs into water from pulp & paper mills where fine & tissue papers are made from deinked wastepaper (47 FR 52066, Nov 18 1982). CONTACT: Robert Dellinger (202) 382-7137.

ISSUE FEDERAL REGISTER, VOL. 48, NO. 1, P. 124

DATE January 3, 1984

SUBJECT Rule: 40 CFR Part 761
EPA amended use authorization for PCBs requires railroad organizations to meet the 60,000 ppm concentration level by July 1 1984; to meet the 1,000 ppm concentration level by July 1 1986; authorizes use of PCBs for remaining useful life of transformers at concentrations below 1,000 ppm; and allows railroad organizations to service transformers to reduce PCB concentrations & cost of disposal; discussion. Effective Feb 2 1983. Doc.No. OPTS-62020A. CONTACT: Douglas Bannerman toll-free 800-424-9065; in DC (202) 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 233, P. 54436

DATE — December 3, 1982

SUBJECT — Rule: 40 CFR Part 761
EPA correction to rule (47 FR 37342, Aug 25 1982) re exposure risks of PCBs in electrical equipment removes food packaging materials from definition of "human food & animal feed." Effective Dec 3 1982. Doc.No. OPTS-62015D. CONTACT: Douglas Bannerman, 202/544-1404 (in DC) or 800-424-9065 (toll-free).

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 223, P. 52066

DATE — November 18, 1982

SUBJECT — Proposed: 40 CFR Part 430
EPA proposes to limit pulp, paper & paperboard industries making fine & tissue papers from deinked wastepaper discharges of PCBs into waters of U.S. by establishing best practicable control technology (BPT) & best available technology economically achievable (BAT). Comments due Jan 17 1983.

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 204, P. 46980

DATE — October 21, 1982

SUBJECT — Rule: 40 CFR Part 761
EPA amdt excludes PCBs produced in closed & controlled waste manufacturing processes from TSCA prohibitions NPRM 47 FR 24976, June 8 1982. Effective Nov 22 1982. Doc.No. OPTS-62017B. CONTACT: Douglas Bannerman, 800-424-9065; in Wash DC, 554-1404.

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 203, P. 46723

DATE — October 20, 1982

SUBJECT — Proposed: 40 CFR Part 761
EPA denies GE petition to exclude monochloro biphenyls (MCBs) & dichloro biphenyls (DCBs) from its polychlorinated biphenyl (PCB) regs. CONTACT: Douglas Bannerman, 202/554-1404.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 165, P. 37258

DATE August 25, 1982

SUBJECT Proposed: 40 CFR Part 761
EPA denies Dow Chemical citizen's petition requesting amdt to exclude monochlorobiphenyls (MCBs) from PCB regs; see 47 FR 19526, May 13 1982. Doc.No. OPTS 211006.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 165, P. 37342

DATE August 25, 1982

SUBJECT Rule: 40 CFR Part 761
EPA authorizes use of PCBs in capacitors & use and servicing of PCBs in electromagnets, circuit breakers, voltage regulators, reclosers, cable switches & transformers (excluding railroad transformers), pursuant to mandate by U.S. Court of Appeals for District of Columbia. Also allows this equipment to be distributed in commerce & disposed of in certain matter. Effective Sept 8 1982. Doc.No. OPTS-62015C.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 134, P. 30270

DATE July 13, 1982

SUBJECT Proposed: 40 CFR Part 761
EPA reopens comment period on proposal to incorporate by reference, certain ASTM test methods in PCB regs; see 47 FR 24976, June 8 1982. Comment deadline Aug 12 1982.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 133, P. 30082

DATE July 12, 1982

SUBJECT Proposed: 40 CFR Part 761
EPA makes available guidelines for analyzing air emissions, water effluents, commercial products & process waste streams for closed & controlled waste processes for PCBs. Provides detailed guidance on sample collection & protocols for data analysis. Comment deadline July 26 1982. Doc.No. OPTS-62017C. Hearing on proposal to exclude PCB production in closed & controlled waste mfgr processes from TSCA sec 6(e); July 26, 9 am, 401 M St NW, Wash DC (62071B) p.30083.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 110, P. 24976

DATE June 8, 1982

SUBJECT Proposed: 40 CFR Part 761
EPA pursuant to court order of Apr 13 1981, proposes to exclude PCB production in closed or controlled waste mfgr process from provisions of sec 6(e) TSCA. Comments by July 23 1982; hearing; Aug 6, Wash DC (time & location available through Industry Asst Office, 800-424-9065). Doc.No. OPTS 62017A.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 099, P. 22123

DATE May 21, 1982

SUBJECT Proposed: 40 CFR Part 761
EPA revises certain test methods of ASTM incorporated by reference in polychlorinated biphenyls (PCBs) regs. Comment deadline June 21 1982. Doc.No. OPTS-62024.

ISSUE FEDERAL REGISTER, VOL. 47, NO. 099, P. 22098

DATE May 21, 1982

SUBJECT Rule: 40 CFR Part 761
EPA updates incorporation by reference of polychlorinated biphenyls (PCBs) in commercial manufacturing, processing & distribution. Effective May 21 1982. Doc.No. OPTS-62025.

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 088, P. 19526

DATE — May 6, 1982

SUBJECT — Rule: 40 CFR Part 761
EPA recodifies regs re polychlorinated biphenyls (PCBs) without substantive change. Effective May 6 1982. Doc.No. OPTS-00032.

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 078, P. 17426

DATE — April 22, 1982

SUBJECT — Proposed: 40 CFR Part 761
EPA in response to court order of Feb 12 1981, proposes to authorize use of PCBs in capacitors and use & servicing of PCBs in electromagnets, circuit breakers, voltae regulators, reclosers, cables, switches/sectionalizers & transformers (excluding railroad transformers). Also proposes to provide for disposal & distribution in commerce of this electrical equipment. Comment deadline May 24 1982. Hearing; June 7, Wash DC (for location & time call 800-424-9065). Doc.No. OPTS-62015B.

ISSUE — FEDERAL REGISTER, VOL. 47, NO. 010, P. 2379

DATE — January 15, 1982

SUBJECT — Proposed: 40 CFR Part 761
EPA denys petition to exempt research & development activities from PCB rule. Doc.No. OPTS-211004.

ISSUE — FEDERAL REGISTER, VOL. 46, NO. 222, P. 56626

DATE — November 18, 1981

SUBJECT — Proposed: 40 CFR Part 761
EPA proposes to extend to Oct 1 1983, deadline for complying with 60,000 ppm requirement for PCBs in railroad transformers. Comment deadline Jan 5 1982. Doc.No. OPTS 62020.

ISSUE FEDERAL REGISTER, VOL. 46, NO. 97, P. 27619

DATE May 20, 1981

SUBJECT Proposed: 40 CFR Part 761
EPA invites comments on ANPR to exclude PCBs below 50 ppm from TSCA Section 6(e)(3) prohibiting processing distribution and manufacturing. Comment deadline Nov 16 1981. Doc. No. OPTS-62014.

ISSUE FEDERAL REGISTER, VOL. 46, NO. 97, P. 27617

DATE May 20, 1981

SUBJECT Proposed: 40 CFR Part 761
EPA invites comments on ANPR to exclude PCBs below 50 ppm from manufacturing prohibitions of TSCA. Comment deadline Nov 16 1981. Doc.No. OPTS62013.

ISSUE FEDERAL REGISTER, VOL. 46, NO. 97, P.27614

DATE May 20, 1981

SUBJECT Rule: 40 CFR Part 761
EPA clarifies issues of interim measures program re use of PCBs in electrical equipment; ANPRM published at 46 FR 16090, Feb 12 1981. Doc.No. OPTS-62015. SEE ALSO Court Order of Apr 13 1981 staying issuance of mandate concerning PCBs below 50 ppm pending EPA decision. Discussion. (OPTS-62012).

ISSUE FEDERAL REGISTER, VOL. 46, NO. 87, P. 25411

DATE May 6, 1981

SUBJECT Proposed: 40 CFR Part 761
EPA will hold in abeyance proposed rule to prohibit use of PCB items in facilities which manufacture, process or store fertilizers or agricultural pesticides until further notice. Doc.No. OPTS-62003C.

ISSUE — FEDERAL REGISTER, VOL. 46, NO. 46, P. 16096

DATE — March 10, 1981

SUBJECT — Proposed: 40 CFR Part 761
EPA ANPRM concerning use of PCBs in electrical equipment. Comment deadline Dec 7 1981. Doc.No. OPTS-62015.

ISSUE — FEDERAL REGISTER, VOL. 46, NO. 46, P. 16090

DATE — March 10, 1981

SUBJECT — Rule: 40 CFR Part 761
EPA in response to Court of Appeals, DC Circut order, provides additional requirements affecting transformers containing 50 ppm or more of PCBs. Ref to inspection & maintenance procedures re interim measures. Effective May 11 1981. Doc.No. OPTS62014.

ISSUE — FEDERAL REGISTER, VOL. 46, NO. 18, P. 9200

DATE — January 28, 1981

SUBJECT — Notice: EPA to prepare EIS on Hudson River PCB Reclamation Demonstration Project.

ISSUE — FEDERAL REGISTER, VOL. 46, NO. 7, P. 2802

DATE — January 12, 1981

SUBJECT — Rule: 40 CFR Parts 122, 264 & 265
EPA interim final rule governing hazardous waste management. Establishes requirements for location, closure and post-closure care; financial requirements; use and management of containers; storage and treatment of hazardous waste and tanks; surface impoundment; waste piles. Regulations do not include requirements for ground-water monitoring, land treatment, landfills, incinerators, chemical, physical and biological treatment units, thermal treatment facilities, injection wells or provisions for surface impoundment or waste pile use for disposal. Effective Jan 12 1981. Comment deadline Mar 13. Doc.No. 3004. Table on regulatory status p. 2804. Discussion of PCB p. 2846. See Appendix showing examples of potentially incompatible waste p. 2872; list of political jurisdictions in which compliance with Section 264.18(a) re seismic considerations, must be demonstrated p. 2873.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 248, P. 84828

DATE December 23, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA extends time for filing comments on proposal prohibiting the use of PCB items in facilities manufacturing, processing or storing fertilizers or agricultural pesticides to Mar 4 1981. Doc.No. OPTS-62003B.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 247, P. 84828

DATE December 22, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA extends time for filing comments on proposal prohibiting the use of PCB items in facilities manufacturing, processing or storing fertilizers or agricultural pesticides to Mar 4 1981. Doc.No. OPTS-62003B.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 243, P. 82844

DATE December 16, 1980

SUBJECT Rule: 40 CFR Part 707
EPA export notification regulations pursuant to Sec 12 TSCA. Effective Jan 15 1981. Reg applies to PCBs, CFCs, 2,3,7,8-TCDD, asbestos, and future substances or mixtures subject to Sec 4, 5, 6 or 7 actions. EPA will foward reports to foreign nation's embassy in Wash DC.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 235, P. 80320

DATE December 4, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA denies petition to permit PCB concentrations as high as 10.0 ppm in floor sweep compounds. Doc.No. OPTS 21101.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 222, P. 84828

DATE November 14, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA extends time for filing comments on proposal prohibiting the use of PCB items in facilities manufacturing, processing or storing fertilizers or agricultural pesticides to Mar 4 1981. Doc.No. OPTS-62003B.

ISSUE — FEDERAL REGISTER, VOL. 45, NO. 210, P. 71364

DATE — October 28, 1980

SUBJECT — Proposed: 7 CFR Part 2859; 9 CFR Parts 308 & 381; 21 CFR Parts 109, 110, 225, 226, 500 & 509; 40 CFR
FSQS, FDA & EPA extends time for filing comments on proposed regulations affecting use of PCB containing equipment in food, feed, agricultural pesticide and fertilizer facilities, to Dec 4 1980. Meeting is scheduled Nov 7 1980, 10 am, USDA Admin Bldg, Wash DC.

ISSUE — FEDERAL REGISTER, VOL. 45, NO. 203, P. 68914

DATE — October 17, 1980

SUBJECT — Rule: 7 CFR Part 2859 and 9 CFR Parts 308 & 381
FSQS prohibits equipment and machinery containing over 50 ppm liquid PCBs on premises of plants regulated under the Federal Meat Inspection Act, Poultry Products Inspection Act, or Egg Products Inspection Act. Exempts capacitors containing less than 3 lbs of PCBs. Effective Nov 17 1980. Discusses regulatory control by EPA, FDA and USDA p. 68916. NPRM Feb 29 1980 (45 FR 13471) and 45 FR 30980, May 9 1980. Effective Nov 17 1980.

ISSUE — FEDERAL REGISTER, VOL. 45, NO. 177, P. 59770

DATE — September 10, 1980

SUBJECT — Notice: EPA policy for implementing civil penalty assessments under Section 16 TSCA. Publishes interim guidelines for determining penalties for violating PCB regulations.

ISSUE — FEDERAL REGISTER, VOL. 45, NO. 171, P. 58266

DATE — September 2, 1980

SUBJECT — Notice: D/Justice proposed consent decree in U.S. v. Interstate Transformer Inc and H.G. Snyder with U.S. District Court for Western District of PA to require defendants to comply with EPA regs governing PCBs. Comment deadline Oct 2 1980.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 151, P. 51631

DATE August 4, 1980

SUBJECT Notice: CPSC denies Citizens for a Better Environment petition (CP 80-4) re sewage sludge products used as soil conditioner and fertilizer should be declared banned hazardous substances. Ref to EPA regulations, PCBs, and cadmium lead.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 136, P. 47168

DATE July 14, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA extends comment period on proposal to prohibit use of PCB items in facilities manufacturing, processing or storing fertilizers or agricultural pesticides to Nov 5 1980. NPRM 45 FR 30989, May 9 1980. Doc.No. OPTS-62003A.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 92, P. 30980

DATE May 9, 1980

SUBJECT Proposed: 7 CFR Part 2859 and 9 CFR Parts 308 & 381
FSQS proposes to prohibit the use of all equipment or machinery containing PCB; and to be removed from service (except capacitors with less than three pounds of PCB). Provides for disposal pursuant to EPA regulations. Comment deadline July 7 1980.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 92, P. 30989

DATE May 9, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA proposes to prohibit the use of PCB items in facilities manufacturing, processing or storing fertilizers or agricultural pesticides. Comment deadline July 8; request for hearing July 29 (informal); requests to hold and participate at hearing June 5. Doc.No. OPTS-62003.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 86, P. 29115

DATE May 1, 1980

SUBJECT Notice: EPA re May 1 1980 expiration date of Open Border Policy for PCB disposal. Doc.No. OPTS 62008 (PCB/PEI).

ISSUE FEDERAL REGISTER, VOL. 45, NO. 75, P. 25828

DATE April 16, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA extends time for filing comments and information on weeping or sweating of PCB contaminated transformers in electrical utility industry. New comment deadline May 5 1980. See 45 FR 14232, Mar 5 1980. Doc.No. OPTS 62006A.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 62, P. 20473

DATE March 28, 1980

SUBJECT Rule: 40 CFR Part 761
EPA amends disposal requirement for PCB capacitors in chemical waste landfills. Small capacitors will be treated same as large capacitors; to permit disposal until Mar 1 1981; provides authority for reopening landfills after Mar 1 1981 for disposing PCB; requires substance to be containerized and packed with absorbent material prior to disposal. Effective Mar 28 1980. Doc.No. OPTS-62004A.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 45, P. 14247

DATE March 5, 1980

SUBJECT Notice: EPA notifies of policy on all future exemption petitions concerning PCBs. Concerns petitions filed after Dec 1 1978 and July 1 1979 deadlines. Doc.No. OPTS-066001-066002.

ISSUE FEDERAL REGISTER, VOL. 45, NO. 45, P. 14232

DATE March 5, 1980

SUBJECT Proposed: 40 CFR Part 761
EPA requests information on certain PCB transformer characteristics referred to in the electrical utility industry as "weeping" or "sweating". Comment deadline Apr 4 1980. Doc.No. OPTS 62006.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 231, P. 68489

DATE November 29, 1979

SUBJECT Proposed: 40 CFR Part 761
EPA clarifies that hydraulic machines are subject to testing requirements of PCB prohibition rules, and proposes to require testing of certain hydraulic systems. Comment deadline Dec 31 1979. Doc.No. OPTS-62005.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 226, P. 66989

DATE November 21, 1979

SUBJECT Notice: EPA lists facilities approved for disposal of PCB.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 226, P. 66851

DATE November 21, 1979

SUBJECT Proposed: 40 CFR Part 761
EPA proposes to extend time for disposing of large PCB capacitors in chemical waste landfills until 30 days after approval of Annex I incinerator is operational; also proposes to permit continued disposal of leaking large PCB capacitors in chemical waste landfills. Comment deadline Dec 21 1979. Hearing will be held Jan 3 1980, 401 M St SW, Wash DC. OPTS-62004.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 192, P. 56856

DATE October 2, 1979

SUBJECT Proposed: 40 CFR Part 707
EPA proposes procedures on submitting export notification under TSCA. Proposals would supersede, effective immediately, earlier interim guidelines published at 43 FR 24818, Jun 7 1978, re export notifications for chlorofluorocarbons and PCBs. Comment deadline Dec 31 1979. Doc. No. OTS-120001.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 183, P. 54296

DATE September 19, 1979

SUBJECT Rule: 40 CFR Part 761
EPA grants interim approval to Sedgwick Cnty KS to dispose of PCB contaminated animals, waste, etc without waiting the mandatory 30 days pursuant to PCB regualtions (44 FR 31514, May 31 1979). Comment deadline Sept 19; hearing is scheduled Sept 17 1979, in Sedgewick Cnty KS. Doc.No. OTS/62002 (PCB/RR-2).

ISSUE FEDERAL REGISTER, VOL. 44, NO. 141, p. 42727

DATE July 20, 1979

SUBJECT Proposed: 40 CFR Part 761
EPA extends period for reply comments on proposed rules for polychlorinated biphenyls (PCBs); pursuant to additional petitions for manufacturing exemptions (see list). See previous announcement at 44 FR 31514, May 31 1979. Reply comments are now due Aug 1 1979.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 132, P. 40132

DATE July 9, 1979

SUBJECT Notice: EPA denies North Carolina petition to modify PCB contaminated soil and debris disposal methods.

ISSUE — FEDERAL REGISTER, VOL. 44, NO. 128, P.

DATE — July 2, 1979

SUBJECT — RULING TAKING EFFECT TODAY: EPA manufacturing, processing, distribution in commerce, and use prohibitions on PCBs. See 44 FR 31514, May 31 1979.

ISSUE — FEDERAL REGISTER, VOL. 44, NO. 106, P. 31567

DATE — May 31, 1979

SUBJECT — Proposed: 40 CFR Part 761
EPA proposes to modify PCB regulations on criteria for chemical waste landfill; would reduce required distance between bottom of landfill liner system and historical high water table from 50 ft to 5 ft. Comment deadline July 16 1979. Hearing, if requested, will be held Aug 6, Wash DC; requests by July 16. Doc.No. OTS/066000.

ISSUE — FEDERAL REGISTER, VOL. 44, NO. 106, P. 31564

DATE — May 31, 1979

SUBJECT — Proposed: 40 CFR Part 761
EPA lists petitions for exemption from prohibition on PCB manufacturing and importation rules. Notice also indicates, in most cases, which petitions for exemption EPA proposes to grant or deny. Comment deadline July 2 1979. Hearing is scheduled July 9, 10 am, Wash DC; requests to participate by July 2. Doc.No. OTS-066001.

ISSUE — FEDERAL REGISTER, VOL. 44, NO. 106, P. 31514

DATE — May 31, 1979

SUBJECT — Rule: 40 CFR Part 761
EPA implements provisions of TSCA prohibiting manufacture, processing, distribution in commerce, and use of polychlorinated biphenyls (PCBs). Incorporates the Disposal & Marking Rule (43 FR 7150, Feb 17 1978) for PCB's and technical amendments (43 FR 33918, Aug 2 1978). Effective July 2 1979. SEE ALSO procedures under Sec. 6 re exemptions from PCB processing and distribution prohibitions; see p. 31558.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 49, P. 13575

DATE March 12, 1979

SUBJECT Notice: EPA invites comments on North Carolina petition seeking amendment of the PCB marking and disposal rule (43 FR 7150, Feb 17 1978) to provide EPA regional administrative the descretion to approve additional disposal methods for soil and debris, contaminated with PCBs. Comment deadline Apr 11 1979.

ISSUE FEDERAL REGISTER, VOL. 44, NO. 1, P. 108

DATE January 2, 1979

SUBJECT Notice: EPA will not implement PCB manufacturing prohibitions pursuant to TSCA until EPA acts on petitions for exemption which have been filed.

ISSUE FEDERAL REGISTER, VOL. 43, NO. 245, P. 59432

DATE December 20, 1978

SUBJECT Notice: EPA publishes facilities approved under authority of PCB (polycholorinated biphenyls) Disposal and Marking Regulation.

ISSUE FEDERAL REGISTER, VOL. 43, NO. 212, P. 50905

DATE November 1, 1978

SUBJECT Rule: 40 CFR Part 750
EPA publishes procedures for filing and processing certain PCB exemption petitions under TSCA. Effective Nov 1 1978. Petitions for exemption from the 1979 PCB manufacturing ban must be filed by Dec 1 1978. See NPRM to implement the PCB ban at 43 FR 24802, June 7 1978. EPA expects to issue final rule about Jan 1 1979.

ISSUE FEDERAL REGISTER, VOL. 43, NO. 208, P. 50041

DATE October 26, 1978

SUBJECT Notice: EPA lists facilities having been approved under authority of Polychlorinated Bithenyls (PCB) Disposal & Marking Regulation. List includes General Electric (GE) Co, Silicone Products Div., Waterford NY; Newco Chemical Waste Systems Inc, Niagara Falls NY; SCA Chemical Services Inc, Model City NY; Waste Management of Alabama Inc, Livingston AL; Chem-Nuclear Systems Inc, Porland OR; and Wes-Con Inc, Twin Falls ID.

ISSUE FEDERAL REGISTER, VOL. 43, NO. 185, P. 43048

DATE September 22, 1978

SUBJECT Proposed: 40 CFR Part 761
EPA extends time for filing reply comments concerning its PCB ban rule (43 FR 24802). New comment deadline Oct 10 1978. Refers to Edison Electric Institute and the Electronic Industries Assn (EIA) requests to cross examine Versar Inc which proposed a report "Microeconomic Impacts of the Proposed PCB Ban Regulations." Cross examination will be held Sept 26 1978, 1 pm, 401 M St SW, Wash DC.

ISSUE FEDERAL REGISTER, VOL. 43, NO. 166, P. 38087

DATE August 25, 1978

SUBJECT Notice: EPA approves Polychlorinated Biphyenyls (PCB) disposal facilities: Newco Chemical Waste Systems Inc, Niagara Falls NY; Waste Management of Alabama Inc, Livingston AL; Chem-Nuclear Systems Inc, Arlington OR; and Wes-Con Inc, Grand View ID.

ISSUE FEDERAL REGISTER, VOL. 43, NO. 166, P. 38057

DATE August 25, 1978

SUBJECT Proposed: 40 CFR Part 761
EPA clarifies contents of Official Record of Proposed Rulemaking re PCB manufacturing processing and distribution (see 43 FR 24802, June 7 1978). Doc.No. FRL 955-1.

ISSUE — FEDERAL REGISTER, VOL. 43, NO. 149, P. 33918

DATE — August 2, 1978

SUBJECT — Rule: 40 CFR Part 761
EPA clarifies ambiguities and errors with respect to disposal and marking rule for PCB (polychlorinated biphenyl). See 43 FR 7150, Feb 17 1978. Effective Aug 2 1978.

ISSUE — FEDERAL REGISTER, VOL. 43, NO. 138, P. 30882

DATE — July 18, 1978

SUBJECT — Notice: EPA approves Region IV (Atlanta GA) and Region X (Seattle WA) facilities for authority for the disposal and marking of Polychlorinated Biphenyls (PCBs).

ISSUE — FEDERAL REGISTER, VOL. 43, NO. 110, P. 24818

DATE — June 7, 1978

SUBJECT — Notice: EPA issues interim procedures to exporters of PCB on how to comply with TSCA. Effective June 7 1978.

ISSUE — FEDERAL REGISTER, VOL 43, NO. 110, P. 24802

DATE — June 7, 1978

SUBJECT — Proposed: 40 CFR Part 761
EPA proposes to ban the use of PCB pursuant to TSCA. Comment deadline Aug 7 1978. Hearing will be held Aug 21 1978, 10 am, EPA HQ, Wash DC. Request to speak must be received by July 31.

ISSUE — FEDERAL REGISTER, VOL. 43, NO. 34, P. 7150

DATE — February 17, 1978

SUBJECT — Rule: 40 CFR Part 761
EPA outlines disposal and marking requirements for PCBs pursuant to TSCA. Effective Apr 18 1978. NPRM May 24 1977 (42 FR 26564). Publishes record of rulemaking re PCB marking and disposal regulations, outlining FR notices, documents, hearings and reports p. 7154. See illustrative marking formats p. 7163.

ISSUE FEDERAL REGISTER, VOL 42, NO. 251, P. 65264

DATE December 30, 1977

SUBJECT Notice: EPA will not implement the bans on PCB manufacturing until the regulation for Sec. 6(e)(2) of TSCA is promulgated in final form.

ISSUE FEDERAL REGISTER, VOL. 42, NO. 232, P. 61259

DATE December 2, 1977

SUBJECT Rule: 40 CFR Part 750
EPA publishes regulations governing EPA's rulemakings implementing provisions of TSCA. Effective Dec 2 1977. These regulations will govern rulemakings on PCB ban regulations. NPRM Apr 21 1977 (42 FR 20640).

ISSUE FEDERAL REGISTER, VOL. 42, NO. 230. P. 60911

DATE November 30, 1977

SUBJECT Rule: 40 CFR Chapter I
EPA implements requirements under TSCA whereby EPA must compensate persons for the cost of participation in regulatory proceedings. This is not a permanent program, but rather a pilot program which will provide, according to EPA, "experience on which a permanent program can be based". Today's rules will apply to rulemaking phasing out most PCB uses. NPRM Jan 7 1977 (42 FR 1492) establishing general EPA program of funding public participation in regulatory proceedings. Outlines rules governing PCB ban rulemaking p. 60911, col 2, bottom. See text of "public funding" provisions of TSCA, Sec. 6(c)(4) p. 60912.

ISSUE FEDERAL REGISTER, VOL. 42, NO. 136, P. 36484

DATE July 15, 1977

SUBJECT Proposed: 40 CFR Part 761
EPA will receive reply comments on proposed regulations regarding PCBs pursuant to TSCA until July 25 1977. NPRM May 24 1977 (42 FR 26564-77).

ISSUE FEDERAL REGISTER, VOL. 42, NO. 123, P. 32555

DATE June 27, 1977

SUBJECT Proposed: 40 CFR Part 261
receive comments on its proposed rules for implementing phased bans on PCBs, pursuant to TSCA (PL 94-469).

ISSUE FEDERAL REGISTER, VOL. 42, NO. 100, P. 26564

DATE May 24, 1977

SUBJECT Proposed: 40 CFR Part 761
EPA proposes regulations prescribing disposal and marking requirements for PCBs and articles and equipment which contain the toxic substance; comment deadline June 22 1977. Hearing on the proposed regulation will be held June 24 1977, 10 am, Rm 3906, EPA Hdqtrs, Wash DC. Requests for participation must be received on or before June 14 1977 text of new Part 761 begins p. 26570; see p. 26576 on marking formats.

ISSUE FEDERAL REGISTER, VOL. 42, NO. 77, P. 20640

DATE April 21, 1977

SUBJECT Proposed: 40 CFR Part 750
EPA proposes to implement procedural requirements applying to all rulemakings under Sec. 6 of the Toxic Substances Control Act (15 USC 2605); comment deadline July 1 1977; comments as to procedures to be followed in their PCB hearing must be received by May 9 1977.

ISSUE FEDERAL REGISTER Vol. 42, p 3701

DATE January 19, 1977

SUBJECT PCB public meeting. Solicitation of comments

ISSUE FEDERAL REGISTER Vol. 42, p 1067

DATE January 5, 1977

SUBJECT Rescheduling of public meeting

ISSUE FEDERAL REGISTER Vol. 41, p 53692

DATE December 8, 1976

SUBJECT Formation of PCB Workgroup
Notice of Public meetings; Solicitation of comments (on marking and disposal)

EPA REPORTS FROM THE NATIONAL TECHNICAL INFORMATION SERVICE (NTIS) DATABASE

These citations from the NTIS database refer to EPA authored, sponsored, contracted, or otherwise funded reports.

The references listed in this section may be purchased from:

NTIS
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4600

TITLE: A Comparative Study of Two Polychlorinated Biphenyl Mixtures (Aroclors 1242 and 1016) Containing 42% Chlorine on Induction of Hepatic Porphyria and Drug Metabolizing Enzymes

AUTHORS: Goldstein, Joyce A. ; Hickman, Patricia ; Burse, Virlyn W. ; Bergman, Hinda

SPONSOR: National Environmental Research Center, Research Triangle Park, N.C.

DATE: 27 Nov 74 14p

NOTE: Pub. in Toxicology and Applied Pharmacology 32, p461-473 1975. Included in the report, Journal Articles on Toxicology, Group 14, PB-280 880 (Journal Article)

REPORT NUMBER PB-280 893/9 (NTIS);

ABSTRACT: Aroclor 1242 and Aroclor 1016 are polychlorinated biphenyl (PCB) mixtures with similar chlorine content (42 vs 41%), but Aroclor 1242 contains 9% biphenyl homologs with five or more chlorines while Aroclor 1016 contains only 1%. The effects of Aroclor 1242 and Aroclor 1016 on induction of hepatic porphyria and drug-metabolizing enzymes were compared in female rats fed 100 ppm or 500 ppm of each. At 1 wk, Aroclor 1242 markedly increased liver weight and all drug-metabolizing pathways tested including cytochrome P-450, liver weight, N-demethylase, nitroreductase, aniline hydroxylase, and glucuronyl transferase, while Aroclor 1016 had produced only very minimal effects. At 6 mo, however, 500 ppm of either Aroclor markedly increased drug-metabolism, while at the lower dose, Aroclor 1016 was much less effective than Aroclor 1242. Both doses of Aroclor 1242 produced prophyria, but only the higher dose of Aroclor 1016 was prophyrogenic. The porphyria occurred after a lag of 1-6 mo and was characterized by excretion and hepatic storage or uroporphyrins. Aroclor tissue concentrations were similar in rats fed equal doses of the two mixtures. Therefore, the marked differences in the biological effects of Aroclor 1016 and Aroclor 1242 cannot be explained by differences in absorption, metabolism, or excretion.

ITLE — A First Order Mass Balance Model for the Sources, Distribution and Fate of PCBs in the Environment (Final rept.)

AUTHOR — Whitmore, Frank C.

PERFORMING ORGANIZATON — Versar, Inc., Springfield, Va.

SPONSOR — Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER — PB-270 220 (NTIS); EPA/460/6-77/006 (EPA); EPA-68-01-3259 (EPA Contract Number)

REPORT DATE — 27 Jul 77 (180p)

ABSTRACT — A first order model for the sources, distribution and fate of PCBs in an aquatic system is described. The model is then applied to Lake Michigan and to the Great Lakes Systems. The results obtained from the model indicate that atmospheric sources are a major PCB input to the Great Lakes. Because of the great water mass of the lakes, the PCB concentration appears to be storage controlled rather than loss controlled. The major loss mechanisms are found to be co-evaporation from the airwater interface and entrapment with sediments. It is estimated that if all inputs or PCBs rate Lake Michigan were eliminated, it would take more than 70 years for the concentration of PCBs in the water to decrease by 50 per cent.

TITLE — A Handbook of Key Federal Regulations and Criteria for Multimedia Environmental Control (Final rept. Sep 78-Jun 79)

AUTHOR — Greenwood, D. R. ; Kingsbury, G. L. ; Cleland, J. G.

PERFORMING ORGANIZATION — Research Triangle Inst., Research Triangle Park, NC.

SPONSOR — Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER — PB80-107998(NTIS); EPA/600/7-79/175 (EPA) EPA-68-02-2612 (EPA Contract Number)

REPORT DATE Aug 79 273p

ABSTRACT The handbook summarizes major Federal environmental regulations and recommendations and the legislative acts that authorize them. It summarizes and tabulates quantitative control limits specified by Federal agencies. It compares the various regulations, standards, and criteria. It includes a selected bibliography addressing Federal environmental control activities.

TITLE A Method for the Sampling and Analysis of Polychlorinated Biphenyls (PCBs) in Ambient Air
(Final rept. Aug 75-Dec 77)

AUTHOR Stratton, Charles L. ; Whitlock, Stuart A. ; Allan, J. Mark
Environmental Science and Engineering, Inc., Gainesville, FL.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB-288 410/4 (NTIS); EPA/600/4-78/048 (EPA)
EPA-68-01-2978 (EPA Contract Number)

REPORT DATE Aug 78 (150p)

ABSTRACT A method was developed for the sampling and analysis of polychlorinated biphenyls (PCBs) in air. An easily constructed, high-volume sampling system is employed with porous polyurethane foam as the collection medium. The sample is collected at the rate of 0.6 to 1.0 cu m per minute. Laboratory procedures described in this document permit the quantitative analysis of even the most volatile PCB species in an air sample. A perchlorination technique for the quantitative analysis of PCB has been adapted for use. The technique is shown to convert even the most volatile PCB species to decachlorobiphenyl for simple and direct quantitative analysis. Data is presented to show conversion efficiencies of a variety of PCBs to decachlorobiphenyl of 101 + or - 6 percent over the range of 0.103 to 10.0 micrograms. A ruggedness test was conducted which indicates the proposed perchlorination technique can yield reliable interlaboratory results. The perchlorination technique is generally necessary for the analysis of low (i.e., less than 25 ng/cu m airborne levels of PCB. The analytical method is effective for the analysis of airborne PCB levels within at least the range of 1 ng/cu m to 50 micrograms/cu m. (Portions of this document are not fully legible)

TITLE	A Note on Polychlorinated Biphenyls in Air
AUTHOR	Kutz, Frederick W. ; Yang, Henry S. C.
CORPORATE SOURCE	Environmental Protection Agency, Washington, D.C.
REPORT DATE	1972 (1p)
NOTES	Pub. in unidentified Jnl. Included in the report, Journal Articles on Pesticide Chemical Analysis. Group 3, PB-275 978.
REPORT NUMBER	Order as PB-275 978

ABSTRACT

Samples of ambient air were collected using an ethylene-glycol impinger sampler, and analyzed for selected pesticides and polychlorinated biphenyls in suburban locations in Florida, Mississippi, and Colorado. Preliminary results for samples taken in April, May, and June of 1975 show that PCB's were present at all locations.

TITLE Accumulation of PCBs (Polychlorinated Biphenyls), Mercury and Cadmium by 'Nereis virens', 'Mercenaria mercenaria', and Palaemonetes pugio' from Contaminated Harbor Sediments (Journal article)

AUTHOR Rubinstein, N. I. ; Lores, E. ; Gregory, N. R.

PERFORMING ORGANIZATION Georgia State Univ., Atlanta.

SPONSOR Environmental Research Lab., Gulf Breeze, FL.

REPORT DATE c1983 (14p)

NOTES Pub. in Aquatic Toxicology 3, p249-260 1983.

REPORT NUMBER PB83-229047 (NTIS); EPA-R-809370 (EPA Contract Number)

ABSTRACT Accumulation of polychlorinated biphenyls (PCBs), mercury, and cadmium by sandworms (Nereis virens), hard clams (Mercenaria mercenaria), and grass shrimp (Palaemonetes pugio) exposed to contaminated sediments from four sites in New York Harbor was studied for a 100-day period. Results from this study support the contention that sediment concentration alone does not reflect bioavailability and that toxicity tests (bioassays) and field monitoring remain the most direct method for estimating bioaccumulation potential of sediment-bound contaminants.

TITLE Acquisition and Chemical Analysis of Mother's Milk for Selected Toxic Substances (Final rept. 23 Jan 78-18 Apr 80)

AUTHOR Erickson, Mitchell D. ; Harris, III, Benjamin S. H. ; Pellizzari, Edo D.; Tomer, Kenneth B. ; Waddell, Richard D.

Research Triangle Inst., Research Triangle Park, NC.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

REPORT NUMBER PB81-231029(NTIS); EPA/560/13-80/029 (EPA)
EPA-68-01-3849 (EPA Contract Number)

REPORT DATE Dec 80 (164p)

ABSTRACT

Samples of mother's milk were collected from Bayonne, NJ; Jersey City, NJ; Pittsburgh, PA; Baton Rouge, LA; and Charleston, WV, and analyzed for volatile (purgeables) and semivolatile (extractable) organics using glass capillary gas chromatography/mass spectrometry/computer. In the volatile fraction, 26 halogenated hydrocarbons, 17 aldehydes, 20 ketones, 11 alcohols, 2 acids, 3 ethers, 1 epoxide, 14 furans, 26 other oxygenated compounds, 4 sulfur-containing compounds, 7 nitrogen-containing compounds, 13 alkanes, 12 alkenes, 7 alkynes, 11 cyclic hydrocarbons, and 15 aromatics were found, including major peaks for hexanal, limonene, dichlorobenzene, and some esters. The levels of dichlorobenzene appeared to be significantly higher in the samples from Jersey City and Bayonne than in samples from other sites. Jersey City samples also appeared to have significantly higher levels of tetrachloroethylene. Charleston and Jersey City samples appeared to have significantly higher levels of chloroform; however, chloroform was observed in the blanks at about 20% of that in the samples. Due to the small sample size and lack of control over the solicitation of sample donors, the data cannot be used to extrapolate to the general population. Fewer semivolatile compounds of interest were found. Polychlorinated naphthalenes, polybrominated biphenyls, chlorinated phenols, and other compounds were specifically sought and not detected (limit of detection about 20-100 ng/mL milk). Polychlorinated biphenyls (PCBs) and DDE were found.

TITLE Adenofibrosis in the Rat Liver, With Persistence of Polychlorinated Biphenyls in Adipose Tissue

AUTHOR Kimbrough, Renate D. ; Linder, Ralph E. ; Burse, Virlyn W. ; Jenning, Ralph W.

PERFORMING ORGANIZATION Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.

REPORT DATE 19 Apr 78 6p

NOTES Pub. in Archives of Environmental Health, v27 p390-395, Dec 73.
Included in the report, Journal Articles on Toxicology, Group 13, PB-280 602.

REPORT NUMBER PB-280 602 (NTIS)

ABSTRACT

Fifty male Sherman strain rats were fed 500 ppm of a polychlorinated biphenyl (PCB) (Aroclor 1254) for six months. Five each were killed zero, one, two, three, four, six, eight, and ten months after exposure to Aroclor had ceased. The livers of these rats were examined by light and electron microscopy. Liver lesions persisted although exposure to PCBs ceased. Ten months after exposure ceased, 1,192 ppm PCBs were still present in the rats' adipose tissue and 22.65 ppm in the rat livers. Aroclor patterns found in the tissues by electron capture gas chromatograhy differed from patterns of dietary Aroclors. Mass spectral analysis of liver and adipose tissue revealed three major Aroclor components with masses of 324, 358, and 392. These contained isotopic clusters indicative of the presence of C15, C16, and C17, respectively.

TITLE

Advances in Exposure, Health and Environmental Effects Studies of PCBs (Polychlorinated Biphenyls): Symposium Proceedings, May 12-13, 1982 (Final rept.)

AUTHOR

Davenport, R. J. ; Bernard, B. K.

PERFORMING ORGANIZATION

Life Systems, Inc., Cleveland, OH.
Corp. Source Codes: 064218000

SPONSOR

Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER

PB84-135771 (NTIS); EPA-68-01-6554 (EPA Contract Number)

REPORT DATE

Dec 83 366p

ABSTRACT

The Proceedings is a compilation of data presented and discussed during a symposium held May 12-13, 1982 in Bethesda, Maryland, to provide an information update for the Environmental Protection Agency's Polychlorinated Biphenyls Program. Nine papers, seven discussion summaries and concluding remarks address data, published or from studies in progress since 1978, in the following topic areas: Analytical Methodologies, Exposure Studies--Environmental Residues and Bioaccumulation, Exposure Studies--Industrial Processes, Health Effects--Epidemiology, Health Effects--Laboratory Studies, Environmental Effects, and Risk Assessment. Each contributed paper includes a significant bibliography of cited and related scientific literature references for those seeking greater detail.

TITLE Age Dependent Model of PCB in a Lake Michigan Food Chain (Rept. for 1 May 78-30 Sep 81)

AUTHOR Thomann, R. V. ; Connolly, J. P.

PERFORMING ORGANIZATION Manhattan Coll., Bronx, NY. Environmental Engineering and Science Program.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-155993 (NTIS); EPA-600/3-84-026 (EPA)
EPA-R-805916 (EPA Contract Number)

REPORT DATE Feb 84 122p

ABSTRACT An age-dependent food chain model that considers species bioenergetics and toxicant exposure through water and food was developed. It was successfully applied to PCB contamination in the Lake Michigan lake trout food chain represented by phytoplankton, Mysis, alewife, and lake trout. The model indicated that for the top predator lake trout, PCB exposure through the food chain can account for greater than 99 percent of the observed body burden. It was estimated that a creterion specifying that PCB concentrations of all ages of lake trout be at or below 5 micrograma/g (wet weight) in the edible portion would require that dissolved PCB concentrations be reduced to somewhere between 0.5 and 2.5 micrograms/l.

TITLE Airborne Organic Contaminants in the Great Lakes Ecosystem (Journal article)

AUTHOR Eisenreich, S. J. ; Looney, B. B. ; Thornton, J. D.

Minnesota Univ., Minneapolis.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-124213 (NTIS); EPA-600/J-81-665 (EPA)
EPA-R-806084 (EPA Contract Number)

REPORT DATE c1981 12p

NOTES Published in Environmental Science and Technology, v15 n1 p30-38 1981.

ABSTRACT Atmospheric fluxes to the Great Lakes are a combination of dry and wet removal processes. These processes are outlined for selected contaminants. Dry deposition is 1.5-5.0 times the wet deposition for the trace organics, selected-chlorinated pesticides and polychlorinated biphenyls. (Copyright (c) 1981 American Chemical Society.)

TITLE Ambient Concentrations of PCBs in the Southeast from STORET Data and Selected EPA Studies (Final rept.)

AUTHOR Bruner, III, R. J. ; Hill, David W.

SPONSOR Environmental Protection Agency, Athens, Ga. Surveillance and Analysis Div.

REPORT NUMBER PB-276 042/9 (NTIS); EPA/904/9-77/032 (EPA)

REPORT DATE Oct 77 28p

...STRACT The PCB problem in the southeast came to light in 1976 with the discovery of high concentration of PCBs in fish tissues collected from Lakes Weiss and Hartwell. Tissue, sediment and water data from these lakes are reported and analyzed. Big Cypress Swamp data are presented and analyzed to determine background concentrations of PCBs in areas remote from human activities. STORET data for the states of NC, SC, GA, FL, AL, MS, TN and KY were analyzed and all stations having one or more concentrations greater than 100 micrograms/kg PCBs in sediments and 0.1 microgram/liter in whole water are reported and potential problem areas are defined. The extent of the PCB problem is evaluated and recommendations are made regarding future sampling needs.

TITLE Ambient Monitoring for PCB Near Three Landfills in the Bloomington, Indiana Area (final rept.)

PERFORMING ORGANIZATION Battelle Columbus Labs., OH.

SPONSOR Environmental Monitoring Systems Lab., Research Triangle Park, NC.

REPORT NUMBER PB85-233492/XAB (NTIS); EPA/600/4-85/044 (EPA)
EPA-68-02-3745 (EPA Contract Number)

REPORT DATE Jun 85 145p

ABSTRACT A monitoring program was conducted to determine PCB levels in ambient air on and in the vicinity of three landfills in the Bloomington, Indiana area. Fixed-height measurements were made at locations on the sites where capacitors containing PCB were exposed (hot spots) and at nominally upwind and downwind locations. Vertical PCB concentration profiles were also obtained at five elevations (2 to 180 cm) above selected hot spots. Sampling was performed over 8-hour daytime periods (approximately 0900-1700 hours) and over 24-hour periods at various on- and off-site locations. Polyurethane foam (PUF) cartridges used either with Du Pont personal-type sampling pumps or EPA-developed high volume samplers were used for collection of PCB from the ambient air. The quantity of PCB (as Aroclor 1242) in the PUF cartridges was determined by extraction and analysis of the extract by electron-capture gas chromatography (EPA Method 608). Meteorological conditions were also measured at the sites during the field monitoring period.

TITLE Ambient Water Quality Criteria for Polychlorinated Biphenyls

CORPORATE SOURCE Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

REPORT NUMBER PB81-117798 (NTIS); EPA-440/5-80-068 (EPA)

REPORT DATE Oct 80 200p

ABSTRACT Section 304(a) of the Clean Water Act (33 U.S.C. 1314(a)), requires EPA to publish and periodically update water quality criteria. These criteria are to reflect the latest scientific knowledge on the identifiable effects of pollutants on public health and welfare, aquatic life, and recreation. This report presents water quality criteria for the titled chemical. It presents concentration criteria for the protection of fresh water and saltwater aquatic life. It presents 'safe' concentrations for humans, and in the case of suspect or proven carcinogens, gives various levels of incremental cancer risk. A section 304(a) water quality criterion is a qualitative or quantitative estimate of the concentration of a water constituent or pollutant in ambient waters which, when not exceeded, will ensure a water quality sufficient to protect a specified water use. Under the Act a criterion is a scientific entity, based solely on data and scientific judgment. It does not reflect considerations of economic or technological feasibility nor is it a water quality standard and in itself has no regulatory effect.

TITLE An Evaluation of Emission Factors for Waste-to-Energy Systems (Final rept. Nov 78-79)

AUTHOR Rinaldi, G. M. ; Balckwood, T. R. ; Harris, D. L. ; Tackett, K. M.

PERFORMING ORGANIZATION Monsanto Research Corp., Dayton, OH.
Corp. Source Codes: 018509000

SPONSOR Industrial Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB80-2266665 (NTIS); EPA-600/7-80-135
EPA-68-03-2550 (EPA Contract Number); MRC-DA-921 (Contractor)

REPORT DATE Jul 80 53p

NOTES See also report dated Aug 77, PB-275 525.

ABSTRACT This report contains a summary of emission factors for the combustion of refuse for the purpose of providing energy recovery or volume reduction. This study was conducted to provide an up-to-date compliance of these factors for use in planning and assessing the benefits and risks from this industry.

TITLE Analysis of Pesticide Residues in Human And Environmental Samples: A Compilation of Methods Selected for Use in Pesticide Monitoring Programs (Final rept.)

AUTHOR Sherma, Joseph ; Beroza, Morton

PERFORMING ORGANIZATION Association of Official Analytical Chemists, Arlington, VA.

SPONSOR Health Effects Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-208752 (NTIS); EPA/600/8-80/038
EPA-68-02-2474 (EPA Contract Number)

REPORT DATE Jun 80 557p

ABSTRACT

This manual provides the pesticide chemist with methodology useful in determining human exposure to pesticides and related industrial chemicals. Methods are also presented for measuring the extent of environmental contamination with these compounds. This manual has been compiled and produced in an effort to promote general acceptance and adoption of uniform chemical methodology of utmost reproducibility and accuracy and to ensure that analytical results can be correlated and directly compared between laboratories. Methods contained in this manual have generally been developed and/or evaluated by this laboratory within the Environmental Toxicology Division. The analytical methodology compiled herein consists of both multiresidue and specific residue procedures. Included also, are miscellaneous topics treating a number of important activities such as the cleaning of laboratory glassware, the preparation of analytical reference standards, and the calibration and maintenance of the gas chromatograph. Several of the methods have been subjected to collaborative studies and have thereby been proved to produce acceptable interlaboratory precision and accuracy. These methods are designated by stars placed at the left of the title in the Table of Contents. Other methods presented are thought to be acceptable but have not been validated by formal interlaboratory collaboration.

TITLE Analysis of Polychlorinated Biphenyl (PCB) Loading Trends in Lake Michigan (Journal article)

AUTHOR Rodgers, P. W. ; Swain, W. R.

PERFORMING ORGANIZATION Limno-Tech, Inc., Ann Arbor, MI.

SPONSOR Amsterdam Univ. (Netherlands) .; Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-245513 (NTIS); EPA/600/J-83/245 (EPA)

REPORT DATE c1983 13p

NOTES Prepared in cooperation with Amsterdam Univ. (Netherlands).
Pub. in Jnl. of Great Lakes Research 9, n4 p548-558 1983.
Not available NTIS

ABSTRACT PCB concentrations in coregonid fishes (bloater chubs) collected from Lake Michigan between 1972 and 1980 are used to infer a historical loading trend for polychlorinated biphenyls (PCBs). A mass balance model was developed to describe the dynamics of PCBs by assuming that historical fish concentrations are proportional to concurrent water column concentrations of PCB. The validity of this assumption is strengthened, since the data represent a single species of fish (a pelagic feeder), a specific age class of the species, and a single laboratory performing the collections and analysis of the data. The results of model analysis indicate that PCB loading to Lake Michigan during the period of observation can be described by a linearly decreasing trend. The calibrated model also forecasts the response of selected fish species to various loading scenarios. (Copyright (c) Internat. Assoc. Great Lakes Res., 1983.)

TITLE Analysis of Polychlorinated Byphenyl (PCB) in Human Blood Serum Samples (Research request no. 2 (Final) Jan-Oct 77)

AUTHOR Stratton, Charles L. ; Geiszler, Paul C.

PERFORMING ORGANIZATION Environmental Science and Engineering, Inc., Gainesville, FL.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB-291 458/8 (NTIS); EPA/560/6-78/007 (EPA)
EPA-68-01-3248 (EPA Contract Number)

REPORT DATE Oct 77 66p

ABSTRACT

A total of 208 human blood serum samples and two mother's milk samples were analyzed for polychlorinated biphenyl (PCB). The samples were supplied to Environmental Science and Engineering, Inc. (ESE) in frozen condition by the Department of Health, Education, and Welfare, Center for Disease Control, Atlanta, Georgia. This report includes the analytical results for these samples and an assessment of the degree of uncertainty involved in the analysis.

TITLE

Analytical Method: The Analysis of By-Product Chlorinated Biphenyls in Water. Revision 2
(Special rept. Sep 84-May 85)

AUTHOR

Erickson, M. D.

PERFORMING ORGANIZATION

Midwest Research Inst., Kansas City, MO.

SPONSOR

Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER

PB86-109105/XAB (NTIS); EPA/560/5-85/012 (EPA)
EPA-68-02-3938 (EPA Contract Number)

REPORT DATE

10 May 85 58p

SPONSOR

Sponsored by Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

ABSTRACT

This is a gas chromatographic/electron impact mass spectrometric (GC/EIMS) method applicable to the determination of chlorinated biphenyls (PCBs) in industrial wastewater. The PCBs present may originate either as synthetic by-products or as contaminants derived from commercial PCB products (e.g., Aroclors). The PCBs may be present as single isomers or complex mixtures and may include all 209 congeners from monochlorobiphenyl through decachlorobiphenyl. A variety of general and specific sample preparation options are presented in this method. This method takes a different approach from those which relyo n Aroclor mixtures for calibration and quantitation. In this method PCBs are detected and quantitated by homolog group. The results can be summed to give a total PCB value comparable to results generated by other methods or they may be presented as 10 individual homolog values. This homolog distribution can provide additional quantitative information on the composition and source of the PCBs. The method performance is assessed for each sample. A set of four (sup 13)C-labeled PCBs is employed as recovery surrogates. If the surrogates are recovered and other QC parameters are within acceptable limits, then the data may be considered valid.

TITLE	Analytical Method: The Analysis of By-Product Chlorinated Biphenyls in Air. Revision 2. (Special rept. Sep 84-May 85)
AUTHOR	Erickson, M. D.
PERFORMING ORGANIZATION	Midwest Research Inst., Kansas City, MO.
SPONSOR	Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
REPORT NUMBER	PB86-109097/XAB (NTIS); EPA/560/5-85/011 (EPA) EPA-68-02-3938 (EPA Contract Number)
REPORT DATE	20 May 85 66p
SPONSOR	Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

ABSTRACT

This is a gas chromatographic/electron impact mass spectrometric (GC/EIMS) method applicable to the determination of chlorinated biphenyls (PCBs) in air emitted from commercial production through stacks, as fugitive emissions, or static (room, other containers, or outside) air. The PCBs present may originate either as synthetic by-products or as contaminants derived from commercial PCB products (e.g., Aroclors). The PCBs may be present as single isomers or complex mixtures and may include all 209 congeners from monochlorobiphenyl through decachlorobiphenyl. A variety of general and specific sample preparation options are presented in this method. This method takes a different approach from those which rely on Aroclor mixtures for calibration and quantitation. In this method PCBs are detected and quantitated by homolog group. The results can be summed to give a total PCB value comparable to results generated by other methods or they may be presented as 10 individual homolog values. This homolog distribution can provide additional quantitative information on the composition and source of the PCBs. The method performance is assessed for each sample. A set of four (sup 13)C-labeled PCBs is employed as recovery surrogates. If the surrogates are recovered and other QC parameters are within acceptable limits, then the data may be considered valid.

TITLE Analytical Method: The Analysis of By-Product Chlorinated Biphenyls in Commercial Products and Product Wastes. Revision 2 (Special rept. Sep 84-May 85)

AUTHOR Erickson, M. D.

Midwest Research Inst., Kansas City, MO.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB86-109089/XAB (NTIS); EPA/560/5-85/010 (EPA)
EPA-68-01-3938 (EPA Contract Number)

REPORT DATE 20 May 85 61p

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

ABSTRACT This is a gas chromatographic/electron impact mass spectrometric (GC/EIMS) method applicable to the determination of chlorinated biphenyls (PCBs) in commercial products and product wastes. The PCBs present may originate either as synthetic by-products or as contaminants derived from commercial PCB products (e.g., Aroclors). The PCBs may be present as single isomers or complex mixtures and may include all 209 congeners from monochlorobiphenyl through decachloro biphenyl. A variety of general and specific sample preparation options are presented in this method. This method takes a different approach from those which re ly on Aroclor mixtures for calibration and quantitation. In this method PCBs are detected and quantitated by homolog group. The results can be summed to give a total PCB value comparable to results generated by other methods or they may be presented as 10 individual homolog values. This homolog distribution can provide additional quantitative information on the composition and source of the PCBs. The method performance is assessed for each sample. A set of four (sup 13)C labeled PCBs is employed as recovery surrogates. If the surrogates are recovered and other QC parameters are within acceptable limits, then the data may be considered valid.

TITLE	Analytical Methods for By-Products PCBs--Preliminary Validation and Interim Methods (Interim rept. no 4, 24 Apr-31 Aug 82)
AUTHOR	Erickson, Mitchell D. ; Stanley, John S. ; Radolovich, Gil ; Turman, Kay; Bauer, Karin
PERFORMING ORGANIZATION	Midwest Research Inst., Kansas City, MO.
SPONSOR	Environmental Protection Agency, Washington, DC. Office of Toxic Substances.
REPORT NUMBER	PB83-127696 (NTIS); EPA-560/5-82-006 (EPA) EPA-68-01-5915 (EPA Contract Number)
REPORT DATE	11 Oct 82 244p
NOTE	See also PB83-126573.

ABSTRACT

This document presents proposed analytical methods for analysis of by-products PCBs in commercial products, product waste streams, wastewaters, and air. The analytical method for commercial products and product waste streams consist of a flexible approach for extraction and cleanup of particular matrices. The 13C-labeled PCB surrogates are added as part of a strong quality assurance program to determine levels of recovery. The wastewater method is based on EPA Methods 608 and 625 with revisions to include use of the 13C-labeled PCB surrogates. The air method is a revision of a proposed EPA method for the collection and analysis of PCBs in air and flue gas emissions. Capillary or packed column gas chromatography/electron impact ionization mass spectrometry is proposed as the primary instrumental method. Response factors and retention times of 77 PCB congeners relative to tetrachlorobiphenyl-d6 are presented in addition to statistical analysis to project validity of the data and extrapolation of relative response factors to all 209 possible congeners. Preliminary studies using the 13C-labeled surrogates to validate specific cleanup procedures and to analyze several commercial products and product wastes indicate that the proposed analytical methods are both feasible and practical.

TITLE Analytical Results of a PCB Test Incineration

AUTHOR Wolbach, C. D. ; Fitch, W. F. ; Flynn, N. ; Markoja, B.

PERFORMING ORGANIZATION Acurex Corp., Mountain View, CA.

REPORT DATE Apr 81 1p

NOTE Included in Proceedings of the Symposium on Process Measurement for Environmental Assessment (2nd), p335 1981.

REPORT NUMBER PB82-211574 (NTIS)

ABSTRACT No abstract available.

TITLE Application of a Sediment Dynamics Model for Estimation of Vertical Burial Rates of PCBs in Southern Lake Michigan

AUTHOR Weininger, D. ; Armstrong, D. E. ; Swackhamer, D. P.

PERFORMING ORGANIZATION Wisconsin Univ.-Madison. Water Chemistry Program.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-215532 (NTIS); EPA-600/D-84-189 (EPA)
EPA-68-01-0502 (EPA Contract Number)

REPORT DATE Jul 84 20p

ABSTRACT The recovery of Lake Michigan from PCB contamination depends on the rates of reduction in PCB input from external sources and removal of PCBs present in the lake system. The loading of PCBs to the Great Lakes should be decreasing. Consequently, if the PCB burden of the lake is also declining, recovery should be occurring. Because the removal of PCBs from the lake water to the bottom sediments is relatively rapid, sediments could play a role as an ultimate sink for PCBs if the normal accretion/burial process is faster than the rate at which PCBs can diffuse through sediments. In this paper vertical burial model is developed to estimate the time scale of the burial process. The model is implemented for PCBs in southern Lake Michigan.

TITLE Application of Methods 606 and 608 for Analysis of PCBs, Organochlorine Pesticides and Phthalate Esters Contained in Landfill Leachates (Project rept. Dec 80-May 81)

AUTHOR Bellar, Thomas A. ; Froning, Beth

CORPORATE SOURCE Environmental Monitoring and Support Lab., Las Vegas, NV.

REPORT NUMBER PB82-227463 (NTIS); EPA-600/4-82-044 (EPA)

REPORT DATE Jun 82 16p

ABSTRACT Leachates collected from a sanitary landfill were spiked with a variety of phthalate esters, polychlorinated biphenyls and organochlorine pesticides. The spiked leachates were then analyzed according to priority pollutant methods 606 and 608. Accuracy, precision and method detection limits were calculated from the resulting analyses.

TITLE Applying for a Permit to Destroy PCB (Polychlorinated Biphenyl) Waste Oil. Volume I. Summary (Final rept. May-Dec 79)

AUTHOR Zelenski, S. G. ; Hall, Joanna ; Haupt, S. E.

PERFORMING ORGANIZATION GCA Corp., Bedford, MA. GCA Technology Div.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB81-173346 (NTIS); EPA-600/2-81-033A (EPA)
EPA-68-02-3168 (EPA Contract Number)

REPORT DATE Mar 81 85p

ABSTRACT

The report documents the permitting process followed by the State of Michigan before allowing a trial destruction burn of polychlorinated biphenyls (PCBs) at the General Motors (GM) Chevrolet Bay City plant. Volume I includes a chronology of events and a matrix depicting the interaction of federal, state, and local government agencies and GM in the permitting process. The matrix presents a list of who requested and who responded to each need for additional information. An analysis of the significance of interactions, including interagency communications, private sector/public communication, and the flow and quality of information developed is provided. Finally, recommendations that are based on this permit application process and that might facilitate subsequent applications for burns of hazardous materials are made.

TITLE

Applying for a Permit to Destroy PCB Waste Oil. Volume II. Documentation (Final rept. May-Dec 79)

AUTHOR

Zelenski, S. G. ; Hall, Joanna ; Haupt, S. E.

PERFORMING ORGANIZATION

GCA Corp., Bedford, MA. GCA Technology Div.

SPONSOR

Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER

PB81-234874 (NTIS); EPA/600/2-81/033B (EPA)
EPA-68-02-3168 (EPA Contract Number)

REPORT DATE

Mar 81 220p

NOTE

See also PB81-173346.

ABSTRACT

The two-volume report documents the permitting process followed by the State of Michigan before allowing a trial destruction burn of polychlorinated biphenyls (PCBs) at the General Motors (GM) Chevrolet Bay City plant. Volume I includes a chronology of events and a matrix depicting the interaction of federal, state, and local government agencies and GM in the permitting process. The matrix presents a list of who requested and who responded to each need for additional information. An analysis of the significance of interactions, including interagency communications, private sector/public communication, and the flow and quality of information developed, is provided. Finally, recommendations that are based on this permit application process and that might facilitate subsequent

applications for burns of hazardous materials are made. Volume II contains the relevant documents summarized in the Volume I lists. Recommendations include: (1) identification of all groups that may play an important role in future permitting processes; (2) contacting these groups by letter or in person; (3) developing a relationship of cooperation with these groups; (4) determining the level of support for proposed action; and (5) determining the necessary course of action based on the level of support.

TITLE Assessment of Emissions of Specific Compounds from a Resource Recovery Municipal Refuse Incinerator (Final rept.)

AUTHOR Haile, C. L. ; Blair, R. B. ; Lucas, R. M. ; Walker, T.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB85-110435/XAB (NTIS); EPA/560/5-84/002 (EPA)
EPA-68-01-5915 (EPA Contract Number)

REPORT DATE Jun 84 94p

ABSTRACT This study was conducted as a part of a nationwide survey to determine organic emissions from major stationary combustion sources. The principal compounds of interest were polynuclear aromatic hydrocarbons (PAHs) and polychlorinated aromatic compounds, including polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs). This report describes an assessment of emissions from a resource recovery municipal refuse incinerator.

TITLE Assessment of PCDDs (Polychlorinated Dibenzodioxins) and PCDFs (Polychlorinated Dibenzofurans) from PCB (Polychlorinated Biphenyl's) Transformer and Capacitor Fires

AUTHOR Lee, A.

PERFORMING ORGANIZATION Technical Resources, Inc., Bethesda, MD.

SPONSOR Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.

REPORT NUMBER PB85-188837/XAB (NTIS); EPA/600/2-85/036 (EPA)
EPA-68-03-3212 (EPA Contract Number)

REPORT DATE Apr 85 130p

ABSTRACT The EPA, under the Toxic Substances Control Act, has been mandated to develop appropriate regulations for the control of exposure to polychlorinated biphenyls (PCBs). In light of this responsibility the EPA Office of Toxic Substances recently issued an Advance Notice of Proposed Rulemaking (ANPR) intended to define the problem of releases of PCBs and other toxic compounds during fires involving transformers and capacitors containing PCBs. The EPA Office of Research and Development (ORD) has also been mandated under the recently released Dioxin Strategy document to evaluate fire accidents involving PCB transformers and capacitors as potential new sources of polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs) in the environment. To develop the information to support the two mandated programs, the EPA/ORD undertook this study to assess the problems associated with fires involving askarels, to catalog the contamination experiences and to review potential decontamination methods as well as disposal of contaminated material. This study assesses the chemistry of PCBs under thermal conditions and evaluates the generation of PCDDs and PCDFs. It reviews technologies for destruction and disposal of PCBs and their toxic contaminants. Methodologies to assess potential hazards and reduce exposure are also discussed.

TITLE Assessment of the Environmental and Economic Impacts of the Ban on Imports of PCBs (Final rept.)

AUTHOR Burruss, Jr, Robert P.

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-270 225 (NTIS); EPA/560/6-77/007 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE Jul 77 175p

ABSTRACT This report summarizes an investigation into the uses of imported polychlorinated biphenyls (PCBs) in the United States. Imported PCBs are presently used only for the maintenance of certain mining machinery. In addition, PCBs are present as a significant impurity in polychlorinated terphenyls (PCTs) imported for use in investment casting waxes. Importation of PCBs for these uses will be banned after 1977 by the Toxic Substances Control Act, unless exemptions are allowed in accordance with the provisions of the Act. The recent Directive of the Council of the European Communities (EEC) prohibits use of PCBs and PCTs in investment casting waxes, but allows continued use of PCBs in mining machinery in Europe.

TITLE Assessment of the Use of Selected Replacement Fluids for PCBS In Electrical Equipment (Final rept.)

AUTHOR Westin, Robert A.

PERFORMING ORGANIZATION Versar, Inc., Springfield, VA.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB-296 377/5 (NTIS) EPA/560/6-77/008 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE 1 Mar 79 109p

NOTE See also PB-252 012.

ABSTRACT This report summarizes the required physical and electrical properties of liquids used as dielectric and cooling fluids in transformers, electromagnets, electric motors, and capacitors. Prior to 1977, PCBs were widely used in all of these applications and provided excellent fire safety. The use of PCBs was banned by the Toxic Substances Control Act. The new materials that were developed as substitutes for PCBs in these applications are discussed in light of the required properties and the performance trade-offs that resulted from their use.

TITLE Assessment of Wastewater Management, Treatment Technology, and Associated Costs for Abatement of PCBs Concentrations in Industrial Effluents. Task II (Final rept.)

AUTHOR Contos, Gayaneh ; Durfree, Robert L. ; Hackman, III, E. E. ; Price, Kenneth

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-251 433/9 (NTIS) EPA/560/6-76/006 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE 30 Jan 76 282p

ABSTRACT This document presents the findings of a study of available wastewater management and treatment technology for the purpose of determining toxic pollutant effluents concentrations and daily load achievable in three industrial categories: polychlorinated biphenyls (PCBs) manufacturing;

capacitor manufacturing; and transformer manufacturing. All plants in the above categories have PCB discharges to either waterways or sewage treatment plants, under normal operating conditions. All plants have discharges to storm sewers or directly to waterways under heavy rainfall conditions. For scrap oils and burnable solid wastes generated at these plants, high temperature, controlled incineration offers a straightforward method of destruction, whereas scientific landfilling appears to be the best suited mode of disposal for nonburnable contaminated solids. Zero discharge objectives can be best achieved by eliminating discharge streams and developing recycle systems. All non-contact cooling water would be segregated, cooled, and recycled. All other wastewater streams would be pretreated. The portion of the pretreated water which would be used in the plant would be treated with carbon, while the excess water would be incinerated in a specially designed system which would allow for energy recovery. Supporting data, rationale for the selection of above recommended treatment technologies and associated costs are contained in this report. Even some on air pollution control is discussed along with the other pollution factors.

TITLE At-Sea Incineration of PCB-Containing Wastes Onboard the M/T VULCANUS (Final rept. Aug 82-Jan 83)

AUTHOR Ackerman, D. G. ; McGaughey, J. F. ; Wagoner, D. E.

PERFORMING ORGANIZATION TRW, Inc., Redondo Beach, CA.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB83-207647 (NTIS); EPA-600/7-83-024 (EPA)
EPA-68-02-3174 (EPA Contract Number)

REPORT DATE Apr 83 287p

ABSTRACT The report describes tests during the incineration-at-sea of a shipload of polychlorinated biphenyls (PCBs) onboard the M/T VULCANUS, during August 1982 in the Gulf of Mexico. A standard EPA-specified sampling train was used to acquire samples of the effluent combustion gases. A fixed-position water-cooled probe, in the starboard incinerator, directed stack gas to the train. Ten tests were performed. Samples of the waste were also taken during each test.

TITLE	Atmospheric Chemistry of PCBs and PAHs. Volume 9 (Final rept. 1974-79)
AUTHOTR	Andren, A. W. ; Doskey, P. V. ; Strand, J. W.
PERFORMING ORGANIZATION	Wisconsin Univ.-Madison. Water Resources Center.
SPONSOR	Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.
REPORT NUMBER	PB81-196487 (NTIS); EPA-905/4-79-029-I (EPA) EPA-R-005142
REPORT DATE	Mar 80 126p

ABSTRACT

The air over Lake Michigan was sampled during 1977 to develop a collection method for PCBs and obtain data about their atmospheric transport and dry deposition onto the lake. A resin, XAD-2, was the most efficient collection medium for PCB vapor and was incorporated into standard high volume air samples for the collection of particulate and vapor phase PCBs. PCB concentrations in air samples taken over Lake Michigan were lower than those taken from urban areas; i.e., Milwaukee. Aroclors 1242 and 1254 were the main components of vapor phase PCBs while in some instances the particulate phase PCBs contained Aroclor 1260. The particulate phase PCBs over Lake Michigan contained a larger percentage of the more volatile mixtures than those reported in urban areas such as Chicago and Milwaukee. PCBs tend to associate with particulates 0.002 to 0.1 micrometer in diameter. The amount and organic carbon content of the particulate phase appear to control vaporization and revolatilization of PCBs.

TITLE Atmospheric Freons and Halogenated Compounds (Final rept.)

AUTHOR Appleby, Alan

PERFORMING ORGANIZATION Rutgers - The State Univ., New Brunswick, N.J. Dept. of Environmental Science.

SPONSOR Environmental Sciences Research Lab., Research Triangle Park, N.C. Gas Kinetics and Photochemistry Branch.

REPORT NUMBER PB-262 432/8 (NTIS); EPA/600/3-76/108 (EPA)
EPA-R-800833 (EPA-R-800833)

REPORT DATE Nov 76 357p

ABSTRACT Ambient levels of atmospheric Freons, halogenated hydrocarbons, and SF6 were measured at various locations in the U.S.A. Compounds such as CC13F, CC12F2, CH3-CC13, and CC14 were ubiquitious and generally measured at sub ppb levels. Tropospherically reactive compounds such as C2C14 and CHC1CC12 were frequently measured; other compounds were measured where a reasonable source was known. A novel pulsed flow coulometry gas chromatographic analysis along with other requisite analytical and calibration procedures were developed and used. Laboratory irradiation simulations established the tropospheric stability of CC13F, CC12F2, CH3CC13, CC14, CC12FCC1F2, the reactivity of the chlorinated ethylenes, and the stratospheric reactivity of CC13F, CC14, and CC12F2. Adventitious labelling of air masses with halogenated compounds was used to demonstrate urban ozone transport to rural areas.

TITLE Atmospheric Input of Trace Metals to Lake Michigan (Journal article)

AUTHOR Eisenreich, S. J.

PERFROMING ORGANIZATION Minnesota Univ., Minneapolis.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB83-247965 (NTIS); EPA-600/J-80-411 (EPA)
EPA-R-805172 (EPA Contract Number)

REPORT DATE c1980 18p

NOTE Pub. in Water, Air and Soil Pollution 13, p287-301 1980.
Not available from NTIS.

ABSRACT Atmospheric bulk deposition was collected on a monthly basis in the Lake Michigan basin from September 1975 through December 1976 to determine the atmospheric loading of trace elements to Lake Michigan. The sampling network consisted of bulk collectors located at 21 locations in the northern and southern basin. The percentage of total atmospheric deposition falling in the southern basin was: Fe-74%, Al-71%; Mn-75%; Zn-67%; Cu-62%; Pb-78%; Cd-74%; Co-approximately 56%; Ca-79%; Mg-62%; Na-65%; K-61%. Atmospheric loading rates reported are in general agreement with estimates made by others from emission inventories and aerosol concentrations. The geographical distribution of trace element loading implicates the southern periphery of Lake Michigan as the principal emission source area.

TITLE Attenuation of Water-Soluble Polychlorinated Biphenyls by Earth Materials (Final rept.)

AUTHOR Griffin, R. A. ; Chian, E. S. K.

PERFORMING ORGANIZATION Illinois State Geological Survey, Urbana.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB80-219652 (NTIS); EPA-600/2-80-027 (EPA)
EPA-R-804684-01-0 (EPA Contract Number)

REPORT DATE May 80 104p

NOTE Prepared in cooperation with Georgia Inst. of Tech., Atlanta. School of Civil Engineering.

ABSTRACT The aqueous solubility, adsorption, mobility, microbial degradation, and volatility of polychlorinated biphenyls (PCBs) were studied under laboratory conditions. The dissolution of Aroclor 1242 in water required five months to reach equilibrium. Generally, the water-soluble fractions of the PCB fluids were richer in the lower chlorinated isomers than in the original mixture of isomers in the fluid.

TITLE Audit of the Vulcanus Incineration Ship Prior to the August 1982 PCB Burn, Mobile, Alabama (Final rept.)

AUTHOR Sexton, F. W. ; Lentzen, D. E.

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, NC. Systems and Measurements Div.

SPONSOR Sponsor: Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB83-193698 (NTIS); EPA-600/7-83-023 (EPA)
EPA-68-02-3146 (EPA Contract Number)

REPORT DATE Apr 83 28p

ABSTRACT The report gives results of an evaluation of three systems aboard the Vulcanus, a Singapore-registered tanker that has been converted for incinerating industrial waste at sea. The ship has been operating for several years, disposing of various chemical wastes generated mainly in the European community. Industrial waste disposal by incineration at sea is also an option for U.S. waste management systems and thus is of interest to the EPA. Audit results include a summary of audit results, audit procedures, audit calculations, test results, recommendations, and audit standards.

TITLE	Baseline Concentrations of Polychlorinated Biphenyls and DDT in Lake Michigan Fish, 1971
AUTHOR	Veith, Gilman D.
PERFORMING ORGANIZATION	National Water Quality Lab., Duluth, Minn.
REPORT NUMBER	PB-275 994/2 (NTIS)
REPORT DATE	1975 9p
NOTE	Pub. in Pesticides Monitoring Jnl., v9 n1 p21-29, Jun 75. Included in the report, Journal Articles on Pesticide Residues in the Environment, Group 1, PB-275 989.

ABSTRACT

Responding to the recommendations of the Lake Michigan Interstate Pesticide Committee, the author aimed to establish baseline data on polychlorinated biphenyls (PCB's) and DDT in Lake Michigan fish in 1971. Because the past 2 years had witnessed unprecedented legislative action to protect food resources and other aquatic species near the top of the food chain from persistent hazardous chemicals, the author also attempted to gauge the impact of cooperative legislative action on the quality of large lakes.

TITLE	Baseline Concentrations of Polychlorinated Biphenyls and DDT in Lake Michigan Fish, 1971
AUTHOR	Veith, Gilman D.
PERFORMING ORGANIZATION	National Water Quality Lab., Duluth, Minn.
SPONSOR	Wisconsin Univ., Madison. Dept. of Civil and Environmental Engineering.
REPORT NUMBER	PB-274 850/7 (NTIS)
REPORT DATE	1975 9p
NOTE	Pub. in Pesticides Monitoring Jnl., v9 n1 Jun 75. Sponsored in part by Wisconsin Univ., Madison. Dept. of Civil and Environmental Engineering. Included in the report, Journal Articles on Pesticide Residues in Animals, PB-274 846.
ABSTRACT	Responding to the recommendations of the Lake Michign Interstate Pesticide Committee, the author aimed to establish baseline data on polychlorinated biphenyls (PCB's) and DDT in Lake Michigan fish in 1971. Thirteen species of fish taken from 14 regions of Lake Michigan in the fall of 1971 were analyzed for PCB's and DDT analogs. Mean wet-weight concentrations of PCB's similar to Aroclor 1254 ranged from 2.7 ppm in rainbow smelt to 15 ppm in lake trout. Most trout and salmon longer than 12 inches contained PCB's at concentrations greater than the tolerance level of 5 ppm established by the Food and Drug Administration, U.S. Department of Health, Education, and Welfare.

TITLE	Baseline Estimates and Time Trends for Beta-Benzene Hexachloride, Hexachlorobenzene, and Polychlorinated Biphenyls in Human Adipose Tissue 1970-1983 (Final Report)
AUTHOR	Mack, G. A. ; Mohadjer, L.
PERFORMING ORGANIZATION	Battelle Columbus Div., OH.
SPONSOR	Westat, Inc., Rockville, MD. Research Div.; Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.
REPORT NUMBER	PB86-161 759/AB (NTIS); EPA/560/5-85/025 (EPA) EPA-68-01-6721 (EPA Contract Number)
REPORT DATE	30 Sep 85 130p
NOTE	Prepared in cooperation with Westat, Inc., Rockville, MD. Research Div. Sponsored by Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

ABSTRACT

The National Human Adipose Tissue Survey (NHATS) is an on-going annual program to collect and chemically analyze adipose tissue specimens from a representative national sample of autopsied cadavers and surgical patients. The objective of the program is to estimate baseline levels and time trends for the presence of toxic chemicals in the adipose tissue of the U.S. population. This report presents the results of a statistical analysis conducted on three specific chemicals: Beta-benzene hexachloride (beta-BHC), hexachlorobenzene (HCB), and polychlorinated biphenyls (PCBs). The results are based on NHATS data collected between 1970 and 1983. The results include baseline estimates of the percentages of the population having detectable levels of these compounds in their adipose tissue as well as estimates of the mean and median levels. Estimates are given separately for various demographic groups and geographic regions of the country as well as national estimates. Results of the analysis indicate that nearly 100 percent of the population have detectable levels of these compounds in their adipose tissue. However, the actual levels of these compounds are either decreasing or remaining nearly constant.

TITLE Binding of Polychlorinated Biphenyls Classified as Either Phenobarbitone-, 3-Methylcholanthrene- or Mixed-Type Inducers to Cytosolic Ah Receptor
(Journal article)

AUTHOR Bandiera, A. ; Safe, S. ; Okey, A. B.

PERFORMING ORGANIZATION Guelph Univ. (Ontario). Guelph-Waterloo Centre.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB83-240788 (NTIS); EPA-600/J-82-369 (EPA)
EPA-R-809764

REPORT NUMBER c1982 23p

NOTES Pub. in Chemico-Biological Interactions 39, p259-277 1982.
Not available from NTIS.

ABSTRACT It has been postulated that reversible, high-affinity binding of 3-methyl-cholanthrene (MC)-type inducers to a receptor protein (the Ah receptor) in hepatic cytosol is essential for induction of aryl hydrocarbon hydroxylase (AHH) enzymic activity. To test this postulate, the binding affinities of 16 highly purified, synthetic chlorinated biphenyl (PCB) congeners, which have been categorized either as phenobarbitone (PB)-, MC- or mixed (PB + MC)-type inducers of cytochrome P-450-dependent monooxygenases have been examined. The affinity of individual biphenyl congeners for the receptor was determined by their competition with 2,3,7,8-(3 sup H) tetrachlorodibenzo-p-dioxin ((3 sup H)TCDD) for specific cytosolic binding sites as measured by sucrose density gradient analysis following dextran-charcoal treatment.

TITLE Bioaccumulation of DDT and PCB in Tissues of Marine Fishes

AUTHOR Butler, P. A. ; Schutzmann, R. L.

PERFORMING ORGANIZATION Environmental Research Lab., Gulf Breeze, FL.

REPORT NUMBER PB80-185234 (NTIS); EPA-600/J-79-081 (EPA)

REPORT DATE 1979 11p

NOTES Pub. in Aquatic Toxicology, Amer. Soc. for Testing and Materials-Spec. Tec. Pub. 667 p212-220 1979.

ABSTRACT Fishes of commercial importance were monitored in New England coastal waters in 1974 to determine whether synthetic organic residues in the fish were large enough to affect the utilization of such fish as food by man or to interfere with their ability to reproduce. About 700 fish of 20 species were pooled in samples of five to ten and the livers were analyzed. Several species, including the spiny dogfish, contained residues of dichlorodiphenyltrichloroethane (DDT) and its metabolites of polychlorinated biphenyl (PCB) compounds in the 1 to 10 micrograms/g (ppm) range. More detailed studies of the dogfish in 1975 demonstrated the transfer of these compounds from the parent fish to the ovarian egg and the mature fetus. The proportions of the DDT metabolites found suggest that this pesticide had been accumulating in the 18-20 year period of maturation of the female and was passed on to the first brood of young. In contrast to the findings of other investigations, there was no fixed relationship in the relative magnitude of DDT and PCB residues when both compounds were present in a sample.

TITLE Brief Communication: Pancreatic-Type Tissue in Livers of Rats Fed Polychlorinated Biphenyls

AUTHOR Kimbrough, R. D.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.

REPORT NUMBER PB - 279 723/1

REPORT DATE 25 Apr 73 3p

NOTES Pub. in Jnl. of Natl. Cancer Inst. 51, p679-681 1973.
Included in the report, Journal Articles on Toxicology. Group 9, PB-279 718. Order from NTIS as PB-279 718.

ABSTRACT

Pancreatic-type tissue in lives of Sherman strain rats is described. This lesion has not been reported previously. The pancreatic-type tissue was observed in livers of rats fed polychlorinated biphenyls (Aroclor 1254) for 6 months. The cells of the tissue had the same staining characteristics as salivary gland epithelium. The lesion was present in 15 of 36 livers examined.

TITLE

Burning Waste Chlorinated Hydrocarbons in a Cement Kiln (Final rept.)

AUTHOR

McDonald, L. D. ; Skinner, D. J. ; Hopton, F. J. ; Thomas, G. H.

PERFORMING ORGANIZATION

Environmental Protection Service, Montreal (Quebec).

SPONSOR

Environmental Protection Agency, Washington, D.C. Office of Solid Waste.

REPORT NUMBER

PB-280 118/1 (NTIS); EPA/530/SW-147C (EPA)
EPA-68-01-2966 (EPA Contract Number)

REPORT DATE

Jan 78 221p

ABSTRACT

An experimental program was carried out in 1975/76 at the St. Lawrence Cement Co., Mississauga, Ontario in which waste chlorinated hydrocarbons, containing up to about 46 weight percent chlorine, were burned in a rotary cement kiln. Materials burned included mixtures of ethylene dichloride, chlorotoluene and up to approximately 50 percent polychlorinated biphenyls (PCB). These materials were destroyed in the cement kiln with at least 99.98 percent efficiency in all cases. Emissions of high molecular weight chlorinated hydrocarbons were not detected. Three light chlorinated hydrocarbons, dichloromethane, chloroform and carbon tetrachloride, were found in the emissions in the part per billion or lower range. The quantity of precipitator dust requiring disposal, as well as emissions of particulate matter, increased during the test. A reduction in fossil fuels used while burning chlorinated hydrocarbons was noted.

TITLE	Calculated Contribution of Surface Microlayer PCB to Contamination of Lake Michigan Lake Trout (Journal article)
AUTHOR	Connolly, J. P. ; Thomann, R. V.
PERFORMING ORGANIZATION	Manhattan Coll., Bronx, NY. Environmental Engineering and Science Program.
SPONSOR	Environmental Research Lab.-Duluth, MN.
REPORT NUMBER	PB83-189068 (NTIS); EPA-600/J-82-299 (EPA)
REPORT DATE	1982 11p
NOTE	Pub. in Jnl. of Great Lakes Research, v8 n2 p367-375 1982.

ABSTRACT

The possible significance of PCB concentration in the surface microlayer of Lake Michigan to contamination of lake trout was examined using a modification of a previously developed food chain model. Vertically migrating zooplankton were assumed to spend a fraction of each day exposed to a surface microlayer with dissolved and phytoplankton PCB concentrations at values that resulted in an average exposure concentration 2.1 times greater than subsurface levels. Considering a worst case scenario, the model indicated that approximately 12% (3 micrograms/g) of the PCB concentration in adult lake trout could be contributed from the microlayer.

TITLE Characterization of Hazardous Waste Sites, a Methods Manual. Volume 3. Available Laboratory Analytical Methods (Response rept. 7 Jan 80-Feb 84)

AUTHOR Plumb, Jr, R. H.

PERFORMING ORGANIZATION Lockheed Engineering and Management Services Co., Inc., Las Vegas, NV.

SPONSOR Environmental Monitoring Systems Lab., Las Vegas, NV.

REPORT NUMBER PB84-191048 (NTIS); EPA-600/4-84-038 (EPA)
EPA-68-03-3050 (EPA Contract Number)

REPORT DATE May 84 690p

NOTES See also PB84-126929.

ABSTRACT A manual of available analytical procedures has been prepared as Volume 3 of the report Characterization of Hazardous Waste Sites - A Methods Manual. This manual provides detailed instructions for the preparation and analysis of hazardous waste, water, soil/sediment, biological tissue, and air samples for 261 substances listed in the hazardous waste regulations. Each of the methods for the 946 analyte-matrix combinations that have been accumulated in this volume is classified as either 'evaluated' or 'available' based on the availability of precision and accuracy data.

TITLE Chemical Market Input/Output Analysis of Selected Chemical Substances to Assess Sources of Environmental Contamination: Task II. Biphenyl and Diphenyl Oxide (Final rept.)

AUTHOR Meylan, William M. ; Howard, Philip H.

PERRFORMING ORGANIZATION Syracuse Research Corp., N.Y. Center for Chemical Hazard Assessment.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-275 097/4 (NTIS); EPA/560/6-77/003 (EPA)
EPA-68-01-3224

REPORT DATE Oct 76 120p

NOTES See also report dated Mar 76, PB-271 018.

ABSTRACT This report considers the sources of environmental contamination from biphenyl and diphenyl oxide. Biphenyl is manufactured in commercial quantities for use in dye carriers, heat transfer fluids, derivatives such as PCB's and alkylated biphenyls, and fruit fungicides. Diphenyl oxide is manufactured in commercial quantities for use in dye carriers, heat transfer fluids, derivatives such as butylchlorodiphenyl oxide, decabromodiphenyl oxide, surfactants, and perfumes and soaps. Thus, this report concentrates on the commercial production and use of biphenyl and diphenyl oxide. Standards established by the Occupational Safety and Health Administration have controlled the occupational exposure to biphenyl and diphenyl oxide; however, large quantities of these chemicals are released to the external environment, particularly to waste treatment facilities which may utilize chlorine disinfection. Laboratory studies indicate that the biphenyl nucleus can undergo chlorination to various chlorobiphenyl isomers during treatment chlorine disinfection.

TITLE Chemistry Laboratory Manual for Bottom Sediments and Elutriate Testing Environmental Protection Agency, Chicago, IL. Central Regional Lab.

REPORT NUMBER PB-294 596/2 (NTIS); EPA/905/4-79/014 (EPA)

REPORT DATE Mar 79 158p

ABSTRACT This document contains the procedures which are used at the EPA, Region V, Central Regional Laboratory for the analysis of bulk sediments, elutriates and other solid samples.

TITLE Comprehensive Assessment of the Specific Compounds Present in Combustion Processes. Volume 4. National Estimates of Emission of Specific Compounds from Coal Fired Utility Boiler Plants (Final rept.)

AUTHOR Lucas, R. M. ; Kircher, G. W.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Research Triangle Inst., Research Triangle Park, NC.; Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB86-103058/KAB (NTIS); EPA/560/5-83/007 (EPA)
EPA-68-02-3938

REPORT DATE Aug 85 31p

NOTES See also PB86-103041. Prepared in cooperation with Research Triangle Inst., Research Triangle Park, NC.

ABSTRACT Specimens were acquired from influents and effluents from seven coal-fired utility boilers. The specimens were chemically analyzed for toxic compounds in the polycyclic organic matter group. The specific target compounds were polychlorinated dibenzo(p)-dioxins (PCDDs), dibenzofurans (PCDFs), biphenyls (PCBs), selected polynuclear aromatic hydrocarbons (PAHs) and selected phthalates. Twelve PAH compounds and six phthalate compounds were included among the targetted compounds. Naphthalene was the most prevalent PAH compound detected. It was found in the flue gas emissions from all seven facilities. Other PAHs were also detected in the coal at all seven facilities but were only rarely detected in the other media. No PCDDs or PCDFs were detected in any of the acquired specimens. PCBs were only detected in one other media, the influent combustion air.

TITLE Comprehensive Assessment of the Specific Compounds Present in Combustion Processes. Volume 2. Design for a National Survey of Emission of Specific Compounds from Coal Fired Utility Boiler Plants (Final rept.)

AUTHOR Lucas, R. M. ; Melroy, D. K.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Research Triangle Inst., Research Triangle Park, NC.; Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB86-103041/XAB (NTIS); EPA/560/5-83/005 (EPA)
EPA-68-02-3938 (EPA Contract Number)

REPORT DATE Aug 85 64p

NOTE See also PB84-151984 and PB86-103058. Prepared in cooperation with Research Triangle Inst., Research Triangle Park, NC.

ABSTRACT The emission of several toxic compounds in the polycyclic organic group has been reported from stationary combustion processes. It has been demonstrated that a theoretical potential exists for the formation of these compounds as the results of combustion of coal-refuse, wood, municipal refuse, waste oil, and coal. To investigate this topic further, a pilot study was designed to obtain data on which to base a national survey. The overall objectives of the pilot study were to ascertain the number of combustion sites and the number of days of sampling required at each site to adequately estimate the level and prevalence of these toxic substances in the emissions from combustion processes and to do so at a minimum cost. For each facility a complex, multimedia sampling design was developed for the collection of solid, liquid, and gaseous influents and effluents. In addition, measurements of process parameters were also taken. This design allowed for the estimation of the inputs into the process, the efficiency of the combustion process, and the emissions from the process. Using the estimates of the variability of the resulting data and cost estimates based on the experience gained in the pilot, a national survey design was developed. Sampling is planned for seven coal and nine refuse combustion facilities for 5 days each. Estimates of the levels of toxic substances are anticipated to have a precision of + or - 5 to + or - 60%.

TITLE Comprehensive Assessment of the Specific Compounds Present in Combustion Processes. Volume 3. National Survey of Organic Emissions from Coal Fired Utility Boiler Plants (Final rept., task 52)

AUTHOR Haile, C. L. ; Stanley, J. S. ; Walker, T. ; Cobb, G. R. ; Boomer, B. A.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

REPORT NUMBER PB84-151984 (NTIS); EPA-560/5-83-006 (EPA)
EPA-68-01-5815 (EPA Contract Number)

REPORT DATE Sep 83 236p

NOTE See also PB84-140870.

ABSTRACT This study was conducted as a part of a nationwide survey to determine organic emissions from major stationary combustion sources. The principal compounds of interest are polynuclear aromatic hydrocarbons (PAHs) and chlorinated aromatic compounds, including polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs). This report describes the methods and results of sampling and analysis activities at the seven plants constituting the nationwide survey of coal fired utility boiler plants.

TITLE Comprehensive Assessment of the Specific Compounds Present in Combustion Processes. Volume 1. Pilot Study of Combustion Emissions Variability (Final rept.)

AUTHOR Haile, C. ; Stanley, J. S. ; Lucas, R. M. ; Nulton, C. P. ; Yauger, Jr, W. L.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Research Triangle Inst., Research Triangle Park, NC.; Southwest Research Inst., San Antonio, TX.; Gulf South Research Inst., New Orleans, LA.; Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB84-140870 (NTIS) EPA-560/5-83-004 (EPA)
EPA-68-01-5915 (EPA Contract Number)

REPORT DATE Jun 83 317p

NOTES Prepared in cooperation with Research Triangle Inst., Research Triangle, NC., Southwest Research Inst., San Antonio, TX. and Gulf South Research Inst., New Orleans.

ABSTRACT This pilot study was conducted as a prelude to a nation wide survey of organic emissions from major stationary combustion sources. The primary objectives of the pilot study were to obtain data on the variability of organic emissions from two such sources and to evaluate the sampling and analysis methods. These data are used to construct the survey design for the nationwide survey. The compounds of interest are polynuclear aromatic hydrocarbons (PAHs) and chlorinated aromatic compounds, including polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated di-benzofurans (PCDFs). Of particular interest is 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). In addition total cadmium was also determined in special samples from both plants to meet special Environmental Protection Agency (EPA) needs. A summary of the results of this study is contained in Section 2 of this report. Section 3 presents recommendations for future work. Brief descriptions of the two combustion sources are contained in Section 4. The sampling and analysis methods are described in Sections 5 and 6. Sections 7 and 8 present the field test data and analytical results. The analytical quality assurance results are summarized in Section 9. Section 10 presents the emissions results and Section 11 is a statistical summary of the emissions results.

TITLE Concentration Technologies for Hazardous Aqueous Waste Treatment (Interim rept.)

AUTHOR Shuckrow, Alan J. ; Pajak, Andrew P. ; Osheka, Jerome W.

PERFORMING ORGANIZATION Touhill, Shuckrow and Associates, Inc., Pittsburgh, PA.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB81-150583 (NTIS); EPA-600/2-81-019 (EPA)
EPA-68-03-2766 (EPA Contract Number)

REPORT DATE Feb 81 358p

ABSTRACT A stepwise evaluation of the potential applicability of the candidate technologies to the identified contamination problems was carried out. Technology profiles describing the pertinent processes and current applications were prepared. These profiles formed the basis for the initial screening of the applicability of individual technologies to concentration of hazardous constituents of aqueous wastes. Certain technologies were eliminated from further consideration for reasons discussed in the individual technology profiles. Remaining technologies were carried forward for more detailed review. Compounds identified in the waste streams fell into one of thirteen chemical classes: alcohol, aliphatic, amine, aromatic, halocarbon, metal, miscellaneous, PCB, pesticide, phenol, phthalate, or polynuclear aromatic. The next step in the evaluation process was an extensive literature review which focused on the technologies and upon chemical compounds classes. It was concluded that six processes: biological treatment, chemical coagulation, carbon adsorption, resin adsorption, membrane processes, and stripping have the greatest potential broad range and immediate applicability. In most cases, no single unit process would be sufficient in itself to adequately treat the diverse contamination problems likely to be encountered. Five candidate process trains were formulated as being most broadly applicable to the types of known contamination. A desktop analysis then was performed to assess the ability of each process train to treat each of three selected contamination problems.

TITLE Contaminant Levels in Animal Feeds Used for Toxicity Studies (Journal article)

AUTHOR Coleman, W. Emile ; Tardiff, Robert G.

PERFORMING ORGANIZATION Health Effects Research Lab., Cincinnati, OH.

REPORT NUMBER PB81-201329 (NTIS); EPA-600/J-79-124 (EPA)

DATE May 81 12p

NOTE Pub. in Archives of Environmental Contamination and Toxicology 8, p693-702 1979.

ABSTRACT Samples of commercial feeds for laboratory rats, guinea pigs, cats, monkeys rabbits, and hamsters were collected and analyzed qualitatively and quantitatively for selected antibiotics, trace metals, pesticides (organophosphates and chlorinated hydrocarbons), natural agents, and polychlorinated biphenyls (PCBs). The results indicated that antibiotics, parathion, diazinon, aldrin, and the aflatoxins were not detected, whereas, metals, chlorinated hydrocarbon pesticides (except aldrin), and PCBs were continually present. Malathion and estrogen were found occasionally.

TITLE Contaminant Trends in Lake Trout ('Salvelinus namaycush') of the Upper Great Lakes (Rept. for 1977-82)

AUTHOR DeVault, D. S. ; Willford, W. A. ; Hesselberg, R. J.

PERFORMING ORGANIZATION Fish and Wildlife Service, Ann Arbor, MI. Great Lakes Fishery Lab.

SPONSOR Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

REPORT NUMBER PB86-121217/XAB (NTIS); EPA/905/3-85/001 (NTIS)

REPORT DATE Apr 85 31p

SPONSOR Sponsored by Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

ABSTRACT Contaminant body burdens in lake trout from the Upper Great Lakes have been monitored since 1970 on Lake Michigan and since 1977 and 1978 on Lakes Superior and Huron. Analysis of the Lake Michigan data shows that mean PCB concentrations declined from maximum of 22.91 mg/kg in 1974 to 5.63 in 1982. Mean total DDT concentrations declined from 19.19 mg/kg in 1970 to 2.74 mg/kg in 1982. The decline in both contaminants closely followed first order loss kinetics. If the current declines continue, PCB concentrations will decline to the USFDA tolerance of 2.0 mg/kg in 1988. As this decline is not reflected in other species it will require additional years of monitoring to determine if the decline in dieldrin concentrations between 1979 and 1982 truly represents a declining trend.

TITLE Criteria Document for PCBs

AUTHOR Nisbet, Ian C. T.

PERFORMING ORGANIZATION Massachusetts Audubon Society, Lincoln.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Water Planning and Standards.

REPORT NUMBER PB-255 397 (NTIS); EPA/440/9-76/021 (EPA)
EPA-68-01-4154 (EPA Contract Number)

REPORT DATE Jul 76 624p

NOTE See also PB-255 395.

ABSTRACT

Contents: Introduction--(Principal sources of information, Uses and releases of PCBs into the environment, PCB mixtures and contaminants: the problem of evaluation); Chemical and physical properties--(Nomenclature of chlorobiphenyls and isomers, Manufacture and nomenclature of commercial PCB mixtures, Constitution of Aroclor mixtures, Constitution of other commercial mixtures, Occurrence of certain substitution patterns in PCB mixtures, Physical properties of chlorobiphenyls and PCB mixtures, Physical properties of chlorinated dibenzofurans, Chemical properties of chlorobiphenyls and commercial mixtures); Toxic effects--(Effects on microbial systems, Effects on phytoplankton, Effects on aquatic invertebrates, Effects on fish, Effects on birds, Toxic effects in mammals--acute and subacute studies, Toxicity of PCDFs in mammals and the role of PCDFs in the toxicity of commercial PCBs--(Chronic effects of PCBs in mammals and effects on reproduction, Enzyme induction and other effects on the liver, Induction of porphyria, Miscellaneous biochemical effects, Immunosuppressive effects, Carcinogenic and co-carcinogenic effects, Mutagenic and teratogenic effects, Effects in humans); Environmental fate and effects--(Persistence, metabolism and fate, Bio-accumulation and bio-magnification, Presence in the aquatic environment, Effects on biota and natural ecosystems, Potential effects in the human population).

TITLE Cycling of Pollutants (Final rept.)

AUTHOR Duke, Thomas W.

PERFORMING ORGANIZATION Environmental Research Lab., Gulf Breeze, Fla.

REPORT NUMBER PB-268 572/5 (NTIS); EPA/600/J-76/068 (NTIS)

REPORT DATE 1976 4p

NOTES Pub. in Estuarine Processes, v1 p481-482 1976.

ABSTRACT Environmental distribution of pesticides, their pathways of transfer and bioaccumulation, are known in many instances, yet their ultimate effects on organisms are relatively unknown. Importance of the impact of oil, heavy metals, and pesticides on ecosystems and on biological systems ranging from micro-organisms to fishes is emphasized in this introduction to a symposium on the 'Cycling of Pollutants.' The combined toxicities of methoxychlor, cadmium, and polychlorinated biphenyls were discussed at this session.

TITLE DDT and Polychlorinated Biphenyl (Aroclor 1242(Trade Name)) Effects of Uptake on E. Coli Growth (Journal Article)

AUTHOR Keil, J. E. ; Sandifer, S. H.

PERFORMING ORGANIZATION Medical Univ. of South Carolina, Charleston.

REPORT DATE 1 Feb 72 7p

NOTES Pub. in Water Research, v6 p837-841 1972.
Included in the report, Journal Articles on Toxicology. Group 7, PB-279 709. Order as PB-279-709 froom NTIS.

REPORT NUMBER PB-279 709 (NTIS)

ABSTRACT DDT at 0.01 and PCB at 0.01 and 0.1 ppm consistently stimulated Escherichia coli growht in vitro. Differences between treatments and controls at the conclusion of 24 hours incubation although increased uridine uptake was noted in all DDT and PCB cultures after 5 h of incubation.

TITLE	DDT, PCB and Benzo(a)Pyrene Levels in White Croaker 'Genyonemus lineatus' from Southern California (Journal Version) (Journal article)
AUTHOR	Gossett, R. W. ; Puffer, H. W. ; Arthur, Jr., R. H. ; Young, D. R.
PERFORMING ORGANIZATION	Southern California Coastal Water Research Project Authority, Long Beach.
SPONSOR	Corvallis Environmantal Research Lab., OR.
REPORT NUMBER	PB84-102458 (NTIS); EPA-600/J-83-058 (EPA) EPA-R-807120 (EPA Contract Number)
REPORT DATE	c1983 9p
NOTES	Pub. in Marine Pollution Bulletin 14(2), p60-65, 1983. Not available from NTIS.
ABSTRACT	This paper presents the results of PCB, DDT and benzo(a)pyrene (BaP) determination in white croaker (Genyonemus lineatus) sampled from the coastal waters of metropolitan Los Angeles. The purpose of this research was to assess the potential health hazard caused by the consumption of the edible muscle tissue of this popular sportfish exposed to these pollutants in the coastal waters.

TITLE Decontamination Techniques for Mobile Response Equipment Used at Waste Sites (State-of-the-Art Survey) (Final rept. Apr-May 84)

AUTHOR Meade, J. P. ; Ellis, W. D.

PERFORMING ORGANIZATION JRB Associates, Inc., McLean, VA.

SPONSOR Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.

REPORT NUMBER PB85-247021/XAB (NTIS); EPA/600/2-85/105 (EPA)
EPA-68-03-3113 (EPA Contract Number)

REPORT DATE Aug 85 75p

ABSTRACT A state-of-the-art review of facility and equipment decontamination, contamination assessment, and contamination avoidance has been conducted. The review, based on an intensive literature search and a survey of various equipment manufacturers, provides preliminary background material on the subject. The information developed here constitutes an important 'head start' for those who need to establish preventive measures, decontamination plans, and procedures for response personnel and cleanup equipment used at hazardous waste sites. The study discusses various decontamination methods, such as use of solvents to wash off contaminants, use of chemical means to degrade contaminants, and use of physical means to remove contaminants. Chemical and physical testing methods designed to assess the nature of the contaminant and the quantity and extent of contamination were also investigated. Also discussed in the report are procedures that can be used to prevent contamination of response equipment and personnel. These preventive procedures are: enclosures to prevent spread of contaminants, safety features on response equipment to prevent spills and leaks, protective coatings on response equipment surfaces, and protective clothing and furnishings for personnel. Three case studies were also reviewed: the Three Mile Island cleanup, the 'Vulcanus' incinerator ship cleanup (dioxins and PCBs), and PCB cleanups in Binghamton, New York. The review has identified several methods that could be of value in effectively decontaminating response equipment units such as a mobile incinerator at a reasonable cost.

TITLE	Destroying Chemical Wastes in Commercial Scale Incinerators (Final rept. on Phase 2)
AUTHOR	Ackerman, D. ; Clausen, J. ; Grant, A. ; Johnson, R. ; Shih, C.
PERFORMING ORGANIZATION	TRW Defense and Space Systems Group, Redondo Beach, Calif.
SPONSOR	Environmental Protection Agency, Washington, D.C. Office of Solid Waste Management Programs.
REPORT NUMBER	PB-278 816/4 (NTIS); EPA/530/SW-155c (EPA) EPA-68-01-2966 (EPA Contract Number)
REPORT DATE	1978 130p
NOTES	See also report dated Dec 76, PB-267 987.
ABSTRACT	The report summarizes the results of a Phase II test program demonstrating the effectiveness of thermal destruction of industrial wastes in commercial scale facilities. Phase I was a study effort to select and match suitable wastes and destruction facilities, and to develop a set of detailed facility test plans. Phase II evaluated the environmental, technical, and economic feasibility of thermally destroying fourteen selected industrial wastes in seven different existing commercial scale processing facilities. Results indicated that each of the wastes tested can be thermally destroyed at high efficiencies. Separate detailed reports published for each facility test series conducted and the two-volume Phase I report are listed in the references.

TITLE: Destroying Chemical Wastes in Commercial Scale Incinerators. Facility Report Number 6. Rollins Environmental Service, Inc., Deer Park, Texas (Facility test report)

AUTHOR: Ackerman, D. ; Clausen, J. ; Johnson, R. ; Tobias, R. ; Zee, C.

PERFORMING ORGANIZATION: TRW Defense and Space Systems Group, Redondo Beach, Calif.

SPONSOR: Environmental Protection Agency, Washington, D.C. Office of Solid Waste Management Programs.

REPORT NUMBER: PB-270 897/2 (NTIS); EPA/SW-122c.5 (EPA)
EPA-68-01-2966 (EPA Contract Number)

REPORT DATE: 1977 173p

NOTES: See also report dated Dec 76, PB-267 987.

ABSTRACT: Incineration tests were conducted at Rollins Environmental Services, Inc., Deer Park, Texas, to determine the effectiveness of thermally destroying two selected industrial wastes: PCB-containing capacitors and nitrochlorobenzene waste (NCB). Analysis of combustion gas samples indicated destruction efficiencies of over 99.999 percent for each waste constituent. Some PCBs were detected in the ash when whole capacitors were incinerated in the rotary kiln, but not when hammermilled capacitors were burned. Standard EPA Method 5 tests were performed on stack emission to determine particulate loading and composition. Estimated cost to hammermill and incinerate 5000 metric tons of waste capacitors per year is $3.65 capital investment and an operating cost of $751/metric ton. Cost of incinerating 4540 metric tons/year of NCB was estimated to be $2.82 million capital and $283/metric ton operating costs.

TITLE: Destruction of PCB-Contaminated Soils with a High-Temperature Fluid-Wall (HTFW) Reactor
(Conference paper)

AUTHOR: Hornig, A. W. ; Masters, H.

PERFORMING ORGANIZATION: Rockwell International, Newbury Park, CA.
Engineering Research Lab.

SPONSOR Thagard Research Corp., Irving, CA.; Baird Corp., Bedford, MA.; Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB84-168798 (NTIS); EPA-600/D-84-072 (EPA)
EPA-68-03-0314 (EPA Contract Number)

REPORT DATE 1984 24p

NOTE Prepared in cooperation with Thagard Research Corp., Irvine, CA., and Baird Corp., Bedford, MA.

ABSTRACT The objective of this project is to demonstrate the feasibility of a high temperature fluid-wall (HTFW) Reactor to detoxify biorefractory hazardous substances, as well as soils contaminated with hazardous materials, such as PCBs, dioxins, and organophosphates. A typical HTFW Reactor consists of a vertical, porous carbon cylinder surrounded by six carbon or silicon carbide electrically conductive rods that heat the core to ca. 2200C. The high equilibrium temperature within the core results in degradation of the hazardous substances to simple atomic or molecular forms; the rapid rate of cooling precludes formation of potentially harmful intermediates or byproducts. The hot zone of the small research reactor used in this study has a 3-in. diameter core and is 3ft long. In a typical test, fine carbon or soil, spiked with a PCB (1% Aroclor 1242), was dropped through the reactor at 100 g/min for 20 min. Representative solid and vapor samples were collected for analysis. Analyses were performed by gas chromatography (GC) with electron capture detection. The results show an overall reduction in concentration of PCB by factor of 2,300,000, corresponding to a destruction and removal efficiency (DRE) of 99.9997%.

TITLE Destruction of PCBs (Polychlorinated Biphenyls). Environmental Applications of Alkali Metal Polyethylene Glycolate Complexes (Project rept. Aug 82-Nov 84)

AUTHOR Iaconianni, F. J.

PERFROMING ORGANIZATION Franklin Research Center, Philadelphia, PA.

SPONSOR Environmental Protection Agency, Cincinnati, OH. Hazardous Waste

REPORT NUMBER PB86-105293/XAB (NTIS); EPA/600/2-85/108 (EPA)

REPORT DATE Sep 85 65p

NOTE Sponsored by Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.

ABSTRACT The project is a follow-on to a study which focused primarily on the feasibility of chemical detoxification of soil using FRCs NaPEG Reagents. The fundamental chemistry of the decomposition of PCBs was also investigated in the previous study. The research described herein involved primarily a laboratory study of treatment methods for PCB contaminated soil using the most effective NaPEG Reagents in terms of reactivity and stability. Laboratory tests during the second phase centered on the treatment of PCB contaminated soil obtained from Buffalo, NY and Philadelphia, PA. The effects of variable reaction parameters were examined in detail.

TITLE Destruction of Polychlorinated Biphenyls in Sewage Sludge During Incineration (Final rept.)

AUTHOR Whitmore, Frank C.

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C.

REPORT DATE 1976 80p

REPORT NUMBER PB-258 162/7 (NTIS); EPA-68-01-1587 (EPA Contract Number)

ABSTRACT An experiment has been carried out to determine the efficiency with which PCB's are destroyed in a municipal sewage sludge incinerator. A standard mixture of PCB's (Aroclor 1254) was injected into the sludge cake at the rate of 50 ppm (dry solids basis) under conditions whereby the various emergent streams from the furnace could be monitored. The experimental results indicate no PCB's present in either the scrubber exhaust water or in the ash; the amount of PCB in the emergent stack gases were found to correspond to destruction ratios in excess of 0.94 under normal furnace operating conditions.

TITLE Determination of PCB and PCT in the Atmosphere Using Filter Paper (Roshi-ho o Mochiita Taikichu PCB, PCT no Sokutei ni Tsuite)

AUTHOR Okita, Toshiichi ; Takizawa, Yukio ; Minagawa, Koei ; Sugai, Ryuichi ; Kifune, Ikuei

SPONSOR Environmental Protection Agency, Research Triangle Park, N.C. Translation Services Section.

REPORT NUMBER PB-258 786-T (NTIS); EPA-TR-76-545 (EPA)

REPORT DATE 1974 5p

NOTE Trans. of Taiki Osen Kenkyu (Japan) v9 n2 p214 1974.

ABSTRACT In order to perform simultaneous measurements of PCT and PCB produced by burning using a simple and rapid method, the authors studied the method of collecting them by glass fiber filter paper coated with glycerine. They also carried out measurements of those chemicals in the environment.

TITLE Determination of PCB in Dust, Ash and Combustion Gas from City Waste Incinerators (Toshigomi Shokyakuro kara Haishutsu Sareru Dasuto, Haibun Oyobi Haigasu chu no PCB Bunseki)

AUTHOR Susuki, Ryota ; Ito, Masayuki ; Noma, Masanori ; Moritani, Akira ; Watanabe, Yuji

SPONSOR Environmental Protection Agency, Research Triangle Park, N.C. Translation Services Section.

REPORT NUMBER PB-258 668-T (NTIS); EPA-TR-76-540 (EPA)

REPORT DATE 1974 12p

NOTE Trans. of Aichi-ken Kogai Chosa Senta Shoho (Japan) v2 p43-49 1974.

ABSTRACT

Polychlorobiphenyl (PCB) contents in burned refuse, water washed ash, dust collected with multicron or electrostatic precipitator and combustion gas were estimated. For the sampling of PCB in the combustion gas, the adsorption into n-hexane by impinger as the wet method, the adsorption by florigil cc :me coated with 5% glycerin as the dry method and the method of two shape-cyiindrical glass filter were investigated. The most effective method was the last one. PCB contents in combustion gas were variated from none detect to 12 microg/N cu m, in burned refuse, water washed ash and dust were 0.01-0.70 microg/g.

TITLE

Determination of Pesticides and PCB's in Industrial and Municipal Wastewaters
(Final rept.)

AUTHOR

Millar, John D. ; Thomas, Richard E. ; Johnson, Donald E.

PERFORMING ORGANIZATION

Southwest Research Inst., San Antonio, TX.

SPONSOR

Environmental Monitoring and Support Lab., Cincinnati, OH.

REPORT NUMBER

PB82-214222 (NTIS); EPA-600/4-82-023 (EPA)
EPA-68-03-2606 (EPA Contract Number)

'EPORT DATE

Apr 82 220p

ABSTRACT

Steps in the procedure for the analysis of 25 chlorinated pesticides and polychlorinated biphenyls were studied. Two gas chromatographic columns and two detectors (electron capture and Hall electrolytic conductivity) were evaluated. Extractions were performed with two solvents (dichloromethane and 15 percent dichloromethane in hexane) at 3 pH's to determine extraction efficiencies. The effects of storage for 7 days, in the presence of residual chlorine, at two temperatures were determined. Florisil and alumina were compared as adsorbents for the cleanup of extracts. Recoveries of the substances from clean water and wastewater were measured, and assessments of accuracy and precision were made. The method is satisfactory for the analysis of clean waters and wastewaters having a relatively low background of interferences. However, it does not work well against medium to high levels of background interferences produced by substances that are electron capture sensitive, especially halogenated ones. Use of the Hall detector is indicated when nonhalogenated electron capture sensitive interferences are a problem, even though some loss in sensitivity will occur. When halogenated interferences are overwhelming, altered gas chromatography conditions and columns, such as temperature programming and columns which produce better resolution than the ones studied in this work, will be required.

TITLE	Determination of 51 Priority Organic Compounds After Extraction from Standard Reference Materials (Journal article)
AUTHOR	Lopez-Avlla, Viorica ; Northcutt, Raymond ; Onstot, Jon ; Wickham, Margie; Billets, Stephen
PERFORMING ORGANIZATION	Midwest Research Inst., Kansas City, MO.
SPONSOR	Environmental Monitoring and Support Lab.-Cincinnati, OH.
REPORT NUMBER	PB83-229633 (NTIS); EPA-600/J-83-018 (EPA) EPA-68-03-2711 (EPA Contract Number)
REPORT DATE	c1983 11p
NOTE	Pub. in Analytical Chemistry, v55 n6 p881-889 1983.

ABSTRACT

An extraction technique, involving homogenization of a sediment sample with dichloromethane at dual pH and phase separation by centrifugation, was used in the determination of 51 organic priority pollutants as identified in a standard reference sediment sample. These compounds were spiked into the sediment and equilibrated for a defined period of time. Separation and identification of individual compounds in the silica gel fractions were accomplished by gas chromatography/mass spectrometry (GC/MS). Method precision and accuracy are discussed. Tentative identifications of other organic compounds found in the sediment are given.

TITLE Development of a Study Plan for Definition of PCBS Usage, Wastes, and Potential Substitution in the Investment Casting Industry. Task III (Final rept.)

AUTHOR Barden, James D. ; Durfee, Robert L.

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-251 842/1 (NTIS); EPA/560/6-76/007 (EPA)
EPA-68-01-3259

REPORT DATE Jan 76 41p

NOTE See also report on Task 2, dated Jan 76, PB-251 433.

ABSTRACT A study plan, designed to define the usage of polychlorinated biphenyls (PCBs) and terphenyls (PCTs) in the investment casting industry, was developed under the subject task. Current knowledge was reviewed and used as input to the study plan development. Methods of information gathering and data sources, as required to define industry scope and technology, wastes, and substitution technology, were also determined.

TITLE Development of Microwave Plasma Detoxification Process for Hazardous Wastes. Phase I (Final rept.)

AUTHOR Bailin, Lionel J. ; Hertzler, Barry L.

PERFORMING ORGANIZATION Lockheed Missiles and Space Co., Inc., Palo Alto, Calif. Palo Alto Research Lab.

SPONSOR Municipal Environmental Research Lab., Cincinnati, Ohio.

REPORT NUMBER PB-268 526/1 (NTIS); EPA/600/2-77/030 (EPA)
EPA-68-03-2190 (EPA Contract Number)

REPORT DATE Apr 77 82p

ABSTRACT The microwave process described in this report is a relatively new application of what has been termed the 'fourth state of matter', or the 'plasma state'. It is the first practical application of a microwave discharge to the decomposition of chemical compounds in significant quantities. This report describes a recent, successful, R&D effort in which a former 'grams-per-hour' system was scaled up to a 5 to 7 pounds-per-hour system, and then its performance was verified with several typical hazardous materials. The materials tested and detoxified were Malathion, methyl-bromide, polychlorinated biphenyls, phenylmercuric acetate, and Kepone. Complete detoxification resulted. Further benefits of the process are the competitive, reasonable costs of about $0.20 per pound of material processed, including all costs. The process warrants further development, namely additional scale-up to pilot and field units. Presently, units up to 100 pounds per hour or so appear feasible to construct and be operable within two or three years.

TITLE Development of Sampling Procedures for Polycyclic Organic Matter and Polychlorinated Biphenyls (Final rept.)

AUTHOR Hermann, T. S.

PERFORMING ORGANIZATION Langston Labs., Inc., Leawood, Kans.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Research and Development.

REPORT NUMBER PB-243 362/1 (NTIS); EPA/650/2-75/007 (EPA)
EPA-02-1255 (EPA Contract Number)

REPORT DATE Aug 74 110p

ABSTRACT After a review of the most promising sampling trains for collecting PCB, BAP and other POM from stationary sources, a decision was made to evaluate the EPA Method 5 train, a train with a cartridge filter and a train developed by Hangebrauck, Von Lehmden and Meeker. Arochlor 1242, pyrene, anthracene, benzo (alpha) pyrene, benzo (alpha) anthracene and coronene were selected to determine collection efficiencies. Based on the results from laboratory evaluations, a modified train was developed and subjected to further studies. The results of critical laboratory and field experiments indicate the sampling train developed on this program could be used to efficiently and conveniently collect BAP, POM, and PCB's simultaneously. In the field studies POM materials were detected, identified and quantified in emissions from several stationary sources, including incinerators, a coal burning steam generating plant and a charcoal burning restaurant.

TITLE Dietary Accumulation of PCBs from a Contaminated Sediment Source by a Demersal Fish ('Leiostomus xanthurus') (Journal article)

AUTHOR Rubinstein, N. I. ; Gilliam, W. T. ; Gregory, N. R.

PERFORMING ORGANIZATION Georgia State Univ., Atlanta.

SPONSOR Environmental Research Lab., Gulf Breeze, FL.

REPORT NUMBER PB85-193019 (NTIS); EPA/600/J-84/267 (EPA)

REPORT DATE c1984 14p

NOTES See also AD-A149 415.
Pub. in Aquatic Toxicology 5, p331-342 Nov 84.
Not available NTIS

ABSTRACT Accumulation and dietary transfer of PCBs from contaminated harbor sediments were studied in a laboratory food chain. Results demonstrate that contaminated sediments serve as a source of PCBs for uptake and trophic transfer in marine systems. Fish exposed to PCB-contaminated sediments and fed a daily diet of polychaetes from contaminated sediment accumulated more than twice the PCB whole-body residues than fish exposed to the same sediment but fed uncontaminated polychaetes. Following 20 days of feeding, the dietary contribution of PCBs accounted for 53% of the total body burden measured in fish, and this percentage appeared to be increasing.

TITLE Drinking Water Criteria Document for Polychlorinated Biphenyls (PCBs) (Final Draft) (Scientific review)

AUTHOR Goetchius, P. ; Gray, D. A. ; Remington, M. B. ; Tullis, D. L. ; Neal, M. W.

SPONSOR Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

PERFORMING ORGANIZATION Syracuse Research Corp., NY.

REPORT NUMBER PB86-118312/XAB (NTIS); EPA/600/X-84/198-1 (EPA); ECAO-CIN-414 ECAO-CIN-414 (Performing Organization Number)

REPORT DATE Apr 85 338p

NOTES Prepared in cooperation with Syracuse Research Corp., NY.

ABSTRACT The Office of Drinking Water (ODW), U.S. Environmental Protection Agency has prepared a Drinking Water Criteria Document on PCBs. The Criteria Document is an extensive review of the following topics: Physical and chemical properties of PCBs, Toxicokinetics and human exposure to PCBs, Health Effects of PCBs in humans and animals, Mechanisms of toxicity of PCBs, and Quantification of toxicological effects of PCBs.

TITLE Dynamic Mass Balance of PCB (Polychlorinated Biphenyls)

AUTHOR Smith, V. Elliott ; Richardson, William L. ; Wethington, Robert

SPONSOR Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

PERFORMING ORGANIZATION Cranbrook Inst. of Science, Bloomfield Hills, MI.

REPORT NUMBER PB83-250308 (NTIS); EPA-600/D-83-092 (EPAO

REPORT DATE Aug 83 42p

ABSTRACT In Saginaw Bay, Lake Huron, about 3.7 metric tons of PCB remain in the active sediment and inputs from the Saginaw River and atmospheric deposition contribute about 1.4 kg PCB per day. In 1977 the U.S. E.P.A. initiated a research effort on Saginaw Bay which was chosen because of the existing PCB contamination, its importance as a commercial and sports fishery, and because, within a relatively small area, many of the limnological processes occurring in the Great Lakes are represented. Therefore, findings from this work might be extrapolated to other parts of the Great Lakes or other similar water systems. This paper presents an analysis of conditions in the bay during 1979 and a projection of future conditions using a dynamic mass balance model. The primary research questions addressed are: (1) whether simulation models of 'total PCB' are sufficiently accurate or whether refined models considering at least mixtures are necessary, (2) whether volatilization of PCB is occurring, and (3) what is the expected longevity of PCB in the system.

TITLE Economic Analysis and Risk Management: An Application to Hazardous Wastes (Final rept. Aug 78-Nov 81)

AUTHOR Anderson, R. ; Dower, R. ; Yang, E.

PERFORMING ORGANIZATION Environmental Law Inst., Washington, DC.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB84-125012 (NTIS); EPA-600/2-84-001 (EPA)
EPA-R-805920 (EPA Contract Number)

REPORT DATE Jan 84 244p

ABSTRACT The report evaluates the usefulness of economic analysis in designing effective and efficient hazardous waste regulations. In particular, it examines the applicability of cost/benefit analysis to the specific problems posed by hazardous waste mangement. The background for the analysis is provided by case studies of regulatory actions on coke oven emissions, saccharin, aflatoxins, and radiation. The report also presents several detailed case studies of past hazardous waste spills. These case studies provided information on how hazardous waste regulations can be analyzed within a cost/benefit framework. The report then selects two specific problems in hazardous waste management to demonstrate qualitatively the application of cost/benefit analysis: uncontrolled dump sites and siting of hazardous waste facilities. It is clear that inadequate data generally will prevent a formal cost/benefit analysis from being undertaken for regulatory programs. However, significant insights can be gained by applying economic analysis to hazardous waste regulations to the extent that available data allow. Such an exercise allows decisionmakers to take a comprehensive and objective view of alternative regulatory policies, revealing cost and benefit relationships and regulatory response priorities.

TITLE Economic Analysis for the Final Rule to Exclude Closed and Controlled Processes from the PCB (Polychlorinated Biphenyls) Ban Rule (Final rept.)

AUTHOR Moll, Amy

CORPORATE SOURCE Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

REPORT NUMBER PB83-159731 (NTIS); EPA-540/4-82-006 (EPA)

REPORT DATE Sep 82 66p

ABSTRACT In May, 1979 EPA promulgated the original PCB ban rule, which permitted the manufacture, processing, distribution, and use of PCBs in concentrations less than 50 ppm. The Court remanded the rule to EPA because EPA did not present sufficient evidence to justify the 50 ppm cut-off decision. The Court ordered that a rule dealing with the incidental generation of PCBs in closed and controlled manufacturing processes be promulgated by October 13, 1982. EPA is promulgating a final rule which excludes closed and controlled processes from the PCB ban. This report estimates the costs and benefits of the final rule as well as the other regulatory alternatives considered by EPA.

TITLE Effectiveness of Activated Carbon for Removal of Toxic and/or Carcinogenic Compounds from Water Supplies (Final rept. Apr 76-Mar 80)

AUTHOR Weber, Jr., Walter J. ; Pirbazari, Massoud

PERFORMING ORGANIZATION Michigan Univ., Ann Arbor. Dept. of Environmental and Water Resources Engineering.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB81-187197 (NTIS); EPA-600/2-81-057 (EPA)
EPA-R-804369 (EPA Contract Number)

REPORT DATE Apr 81 392p

ABSTRACT This research addressed quantification of the performance of fixed-bed granular activated carbon processes for treatment of public water supplies. It included evaluation of the adsorption of selected toxic and/or carcinogenic trace compounds of man-related origin, including carbon tetrachloride, benzene, two commercial mixtures of PCB's dieldrin, and p-dichlorobenzene. The adsorption behavior of the predominant class of natural organic matter and trihalomethane (THM) precursor, humic substances, was also characterized. The Michigan Adsorption Design and Applications Model (MADAM) was tested and found generally able to simulate and predict the performance of fixed-bed adsorbers for removal of the compounds investigated, with the exception of humic acids.

TITLE Effects and Interactions of Polychlorinated Biphenyls (PCB) with Estuarine Microorganisms and Shellfish (Final rept.)

AUTHOR Colwell, Rita R. ; Sayler, Gary S.

PERFORMING ORGANIZATION Maryland Univ., College Park. Dept. of Biology.

SPONSOR Environmental Research Lab., Gulf Breeze, Fla.

REPORT NUMBER PB-272 103/3 (NTIS); EPA/600/3-77/070 (EPA)
EPA-R-803300-01-0 (EPA Contract Number)

REPORT DATE Jun 77 57p

ABSTRACT The role of estuarine bacteria in the mobilization, transport, and removal of polychlorinated biphenyls (PCB) was investigated in estuarine environments. A main objective of this investigation was to determine a secondary impact of PCB contamination of estuarine systems. The specific secondary effect was the PCB-stress-induced accumulation and depuration of enteric bacteria by shellfish, i.e., the Chesapeake Bay oyster, Crassostrea virginica. For this report, bacteria uninhibited by PCB, but capable of growth in the presence of PCB, are defined as PCB-resistant. In this regard, PCB-resistant bacteria were found to be distributed ubiquitously throughout estuarine and marine environments sampled in this study. The residence time of PCB in estuarine and marine environments is concluded to be sufficiently long to induce stress upon estuarine animals.

TITLE Effects of Activated Carbon on the Reactions of Free Chlorine with Phenols
(Journal article)

AUTHOR Voudrias, E. A. ; Larson, R. A. ; Snoeyink, V. L.

PERFORMING ORGANIZATION Illinois Univ. at Urbana-Champaign.

SPONSOR Environmental Protection Agency, Cincinnati, OH. Water Engineering Research Lab.

REPORT NUMBER PB85-225530 (NTIS); EPA/600/J-85/071 (EPA)
EPA-R-805293 (EPA Contract Number)

REPORT DATE c1985 10p

NOTE Pub. in Environmental Science and Technology v19, n5 p441-449 May 85. Not available from NTIS

ABSTRACT The use of prechlorination in drinking water treatment results in contact of free chlorine with activated carbon which has been added to remove organic compounds from water. The chlorine then reacts with the carbon and adsorbed compounds. Free chlorine reacts readily with a group of phenolic compounds (phenol, guaiacol, catechol, 2,6-dimethoxyphenol, and p-chlorophenol) in dilute aqueous solutions (.00001 M) to produce mono-, di-, or trichloro derivatives, but when it reacts with phenols adsorbed on granular activated carbon (GAC), many additional products are formed. GAC exposed to chlorine becomes capable of promoting reactions such as hydroxylation of the aromatic ring, oxidation to quinones, chlorine substitution, carboxylation, and oxidative coupling (dimer formation). The formation of chloro-hydroxybiphenyls (hydroxylated PCBs) (in vivo metabolites of PCBs) is particularly important because of their potential toxicity. Such compounds are the main reaction products from chlorophenols, but they are also formed in smaller amounts from nonchlorinated phenols (phenol and guaiacol). (Copyright (c) 1985, American Chemical Society.)

TITLE Effects of Aroclor (Trade Name) 1248 and 1260 on the Fathead Minnow ('Pimephales promelas')
(Journal article)

AUTHOR Defoe, D. L. ; Veith, G. D. ; Carlson, R. W.

CORPORATE SOURCE Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB-299 455/6 (NTIS); EPA/600/J-78/135 (EPA)

REPORT DATE 11 Apr 78 9p

NOTE Pub. in Jnl. of the Fisheries Research Board of Canada, v35 n7 p997-1002 1978. Summary in French.

ABSTRACT Fathead minnows were exposed to Aroclor(Trademark) 1248 and 1260 in flow-through bioassays to determine the acute (30-d) and chronic (240-d life cycle) effects on the larvae and adults, as well as the bioconcentration of the mixtures of PCBs in the fish. Newly hatched larvae (<8 h old) were the most sensitive; the calculated 30-d LC50 was 4.7 micrograms/L for Aroclor 1248 and 3.3 micrograms/L for Aroclor 1260. Reproduction in fathead minnows occurred at concentrations as high as 3 micrograms/L for Aroclor 1248 and 2.1 micrograms/L for Aroclor 1260, concentrations that significantly affected larval survival. The 20% reduction in the standing crop in the second-generation fish at concentrations as low as 0.4 micrograms/L was due to the death of the larvae soon after hatching. The bioconcentration factor for PCBs was independent of the PCB concentration in the water; in adult females at 25C it was 1.2 x 1000000 for Aroclor 1248 and 2.7 x 1000000 for Aroclor 1260. Females accumulated about twice as much PCBs as the males because of the greater amount of lipid in the female. Exposed fish placed in untreated Lake Superior water eliminated <18% of the body burden after 60 d.

TITLE Effects of Aroclor (Trademark) 1254 on Brook Trout, 'Salvelinus fontinalis' (Final rept. 1972-74)

AUTHOR Snarski, Virginia M. ; Puglisi, Frank A.

CORPORATE SOURCE Environmental Research Lab.-Duluth, Minn.

REPORT NUMBER PB-266 356/5 (NTIS); EPA/600/3-76/112 (EPA)

REPORT DATE Dec 76 44p

ABSTRACT No adverse effects were observed on survival, growth, and reproduction of brook trout exposed for 71 weeks to 0.94 micrograms/l and lower concentrations of the polychlorinated biphenyl Aroclor 1254 (P = 0.05). Survival and growth to 90 days of alevin-juveniles from exposed parents were also unaffected (P = 0.05). Polychlorinated biphenyl concentrations in the brook trout were directly proportional to the water exposure

concentrations (P = 0.05). The PCB tissue concentrations appeared to have reached a steady state by the first sampling after 14 weeks of exposure. The PCB residues (wet-tissue basis) in chronically exposed fish were approximately 2 micrograms/g in the fillet and 9 micrograms/g in the 'whole body' (entire fish minus one fillet and the gonads) at the highest water concentration, 0.94 micrograms/l. The higher residue in the whole body compared to the corresponding fillet was due to the higher fat content of the former.

TITLE Effects of Ocean Dumping Activity, Mid-Atlantic Bight - 1976 (Interim rept.)

AUTHOR Lear, Donald W. ; O'Malley, Marria L. ; Smith, Susan K.

CORPORATE SOURCE Environmental Protection Agency, Philadelphia, Pa. Region III.

REPORT NUMBER PB-273 878/9 (NTIS); EPA/903/9-77/029 (EPA)

REPORT DATE Jul 77 186p

ABSTRACT Significantly high concentrations of metals present in the City of Philadelphia sewage sludge can be found on occasion at points in the sediments in and near the sludge release site. Several bands with high concentrations of metals, in association with high organic carbon, have been partially identified and have persisted for at least 14 months in and adjacent to the southern part of the site. Ambient concentrations of the metals in question have been derived by statistical comparisons over a 3 year period. Polychlorinated biphenyls (PCB's) were widely distributed in concentrations that may be inimical to marine organisms with indicated cyclical inputs, possibly from the coastal zone. Mortalities of the mahogany clam, Arctica islandica, were indicated at loci in and near the ocean dumping activity. Detailed bathymetry of the impacted area south of the site indicates geomorphic features may affect the aggregation of dumped materials. Statistically significant changes of the benthic infaunal communities are occurring in the impacted area south of the sewage sludge release site. Mollusks in the vicinity of the site appear to harbor bacteria of sanitary significance.

TITLE Effects of Post-Implantation Exposure to Selected Pesticides on Reproductivity in Rats (Final rept.)

AUTHOR Spencer, Fitzgerald

PERFORMING ORGANIZATION Southern Univ., Baton Rouge, LA.

SPONSOR Health Effects Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB81-213209 (NTIS); EPA-600/1-81-048 (EPA)
EPA-R-804947 (EPA Contract Number)

REPORT DATE Jun 81 33p

ABSTRACT The post-implantational effects of dinoseb, PCBs (Aroclor 1254), rotenone and zineb on reproductive systems were examined using decidualized pseudopregnant rat as a model. Uterine protein, uterine glycogen, uterine water, and ovarian protein were studied in day 10 decidualized pseudopregnant rats fed the toxicants from days 6 through 9 of pseudopregnancy. Dinoseb reduced uterine protein and uterine glycogen in rats fed 25 ppm and higher concentrations. Uterine water and uterine weight were reduced at the highest dosage of 750 ppm. Ovarian protein was diminished at 150 ppm and higher concentrations. PCBs lowered uterine glycogen, but uterine protein content was not reduced in a dose-related manner. Ovarian protein content was diminished at 50 ppm and higher concentrations. Uterine weight and uterine water were not changed in rats fed up to 1000 ppm of the PCBs. Rotenone reduced uterine protein in rats fed 200 ppm and higher concentrations. In day-16 pregnant rats fed rotenone (100, 200, 400, and 600 ppms) from days 6-;6 of pregnancy, placental protein, placental glycogen, ovarian protein, and maternal body weight were reduced. Additionally, these dosing regimens reduced fetal survival rate. Fetal weight of fetus delivered from rotenone-fed dams was not affected. The decidualized pseudopregnant uterine, and placental functions, and fetal survival rate of rats were not affected by zineb up to 2500 ppm.

TITLE	Effects on Cattle from Exposure to Sewage Sludge (Final rept.)
AUTHOR	Baxter, John C. ; Johnson, Donald ; Kienholz, Eldon ; Burge, Wylie D. ; Cramer, William N.
PERFORMING ORGANIZATION	Metropolitan Denver Sewage Disposal District No. 1, CO.
SPONSOR	Municipal Environmental Research Lab., Cincinnati, OH.
REPORT NUMBER	PB83-170589 (NTIS); EPA-600/2-83-012 (EPA) EPA-68-03-2210 (EPA Contract Number)
REPORT DATE	Feb 83 172p
NOTE	Prepared in cooperation with Colorado State Univ., Fort Collins. Dept. of Animal Science, and Department of Agriculture, Beltsville, MD.
ABSTRACT	Soils, forages, and cattle grazing on a sludge disposal site were examined for trace metals and persistent organics. Soils at the disposal site had increased concentrations of Zn, Cu, Ni, Cd, and Pb. Forages from sludge applied soils had higher levels of Zn, Cd, Cu, and Ni and lower Pb concentrations than forages from soils that had not received sludge. Cattle grazing on the sludge disposal site were healthy with no signs of pathology. Tissues from these cattle did not show elevated levels of metals or persistent organics when compared with cattle not exposed to sewage sludge. Sewage sludge was added to the diets of cattle to simulate worst case conditions of cattle grazing sludge fertilized pastures. The sludge had no positive or negative effects on cattle health or performance but did act as a diet diluent.

TITLE	Emission Assessment of Refuse-Derived Fuel Combustion: Suspension Firing (Rept. for Jun 79-Nov 81)
AUTHOR	Arand, J. K. ; Muzio, L. J. ; Barbour, R. L.
PERFORMING ORGANIZATION	KVB, Inc., Irvine, CA.
SPONSOR	Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.
REPORT NUMBER	PB86-114725/XAB (NTIS); EPA/600/2-85/117 (EPA) EPA-68-03-2773 (EPA Contract Number)
REPORT DATE	Sep 85 166p
NOTE	Sponsored by Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.

ABSTRACT

The suspension burning investigation was conducted in a horizontal laboratory boiler firing at a nominal heat input of 440 kw. The boiler had been modified to simulate large utility boilers and was further modified to investigate co-firing and tri-firing of coal, RDF, and hazardous liquids. Criteria emissions were obtained for a large number of co-fired conditions; many showed reduced nitric oxide emissions with co-firing relative to coal combustion. Organic and inorganic samples of the flue gas showed only two conditions where polynuclear aromatic hydrocarbons (PAH's) were present. Those conditions were with tri-fired powder RDF, coal, and waste oil. Screening criteria showed levels of dioxins and polychlorinated biphenyls (PCB's) were below threshold values requiring complete analysis.

TITLE	Enrichment of PCBs in Lake Michigan Surface Films (Journal article)
AUTHOR	Rice, C. P. ; Eadie, B. J. ; Erstfeld, K. M.
PERFORMING ORGANIZATION	Michigan Univ., Ann Arbor. Great Lakes Research Div.
SPONSOR	Environmental Research Lab.-Duluth, MN.
REPORT NUMBER	PB85-103117 (NTIS); EPA/600/J-82/438 (EPA) EPA-R-808849 (EPA Contract Number)
REPORT DATE	c1982 9p
NOTE	Pub. in Jnl. of Great Lakes Research 8, n2 p265-270 1982. Not available from NTIS.
ABSTRACT	The processes of exchange of PCBs and related organics at the surface of large bodies of water such as the Great Lakes are unavoidably linked to the unique properties of surface films. The authors have observed a 3 to 8 fold enrichment of PCB over underlying water in surface film samples taken from Lake Michigan with a Garrett screen sampler. The particle association of the PCBs was highest in the microlayer, averaging 50% compared to 20% on particles in the subsurface water and less than 5% in the air. The PCBs in the samples were identified as Aroclor 1254 and Aroclor 1242. The percentage composition of the two Aroclors varied between the air and the water as follows: the air was 30.2% Aroclor 1254 and the water (microlayer plus subsurface) was 57.6% Aroclor 1254.

TITLE	Environmental Applications of Advanced Instrumental Analyses: Assistance Projects FY 75
AUTHOR	Alford, Ann L.
PERFORMING ORGANIZATION	Environmental Research Lab., Athens, Ga. Analytical Chemistry Branch.

REPORT NUMBER PB-266 425/8 (NTIS) EPA/600/4-77/004 (EPA)
EPA-16020-GHZ (EPA Contract Number)

REPORT DATE Jan 77 48p

NOTE See also report dated Jun 75, PB-247 056.

ABSTRACT The Analytical Chemistry Branch of the Athens Environmental Research Laboratory identified and measured aquatic pollutants under eight projects in response to requests for assistance from other EPA organizations and other government agencies. In most cases these analyses helped us to solve, or at least to understand more clearly, the related pollution incident, and in some cases the analyses provided evidence for enforcement of regulatory legislation. Under an additional project, analytical consultations were held as requested by various organizations concerned with pollution incidents. This report was submitted in fulfillment of Project 16020 GHZ by the Environmental Research Laboratory, Athens, Georgia. Projects discussed were completed during FY 1975.

TITLE Environmental Assessment of a Waste-to-Energy Process: Braintree Municipal Incinerator

AUTHOR Golembiewski, M. ; Ananth, K. ; Trischan, G. ; Baladi, E.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Industrial Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB80-219421 (NTIS); EPA-600/7-80-149 (EPA)
EPA-68-02-2166 (EPA Contract Number)

REPORT DATE Aug 80 230p

ABSTRACT Midwest Research Institute conducted an array of field tests at the Braintree Municipal Incinerator facility in Braintree, Massachusetts, for the purpose of providing data on multimedia emissions to help determine adverse environmental impact and pollution contol technology needs. There are two incinerators at the Braintree facility; both are of the waterwall type and are designed to burn unprocessed mixed municipal refuse at a rate

of 120 tons/day each. Air pollution control is provided by electrostatic precipitators. Primary emphasis was placed on evaluating air emissions. Analyses were carried out for criteria pollutants (particulates, NOx, SO2, CO, and hydrocarbons) as well as for potentially hazardous compounds such as polychlorinated biphenyls and polycyclic aromatic hydrocarbons. The Environmental Protection Agency-designed Source Assessment Sampling System train was also used as per the Environmental Protection Agency's Level 1 environmental assessment protocol. The data obtained were used to evaluate emissions in each effluent stream on the basis of existing standards or criteria and also through the use of the Environmental Protection Agency's recently devised Source Analysis Model (SAM-1A).

TITLE Environmental Assessment of PCBs in the Atmosphere (Final rept.)

AUTHOR Fuller, B. ; Gordon, J. ; Kornreich, M.

PERFORMING ORGANIZATION MITRE Corp., McLean, Va.

SPONSOR Environmental Protection Agency, Research Triangle Park, N.C.

REPORT NUMBER PB-274 115/5 (NTIS); EPA/450/3-77/045 (EPA)
EPA-68-02-1495 (EPA Contract Number)

REPORT DATE Apr 76 279p

ABSTRACT This report examines atmospheric aspects of environmental problems associated with polychlorinated biphenyls (PCB). Subjects covered include: (1) physical and chemical properties of PCB, (2) monitoring methods for PCB in air, (3) sources of PCB emissions, (4) environmental distribution, transport, and transformation of PCB, (5) methods of control of PCB emissions, and (6) biological effects of PCB.

TITLE Environmental Assessment of Polychlorinated Biphenyls (PCBs) Near New Bedford, MA. Municipal Landfill (Research rept. no. 4 (Final))

AUTHOR Stratton, Charles L. ; Tuttle, Karen L. ; Allan, J. Mark

PERFORMING ORGANIZATION Environmental Science and Engineering, Inc., Gainesville, FL.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB-291 245/9 (NTIS); EPA/560/6-78/006 (EPA)
EPA-68-01-3248 (EPA Contract Number)

REPORT DATE 26 May 78 48p

ABSTRACT A survey was conducted to assess the extent of transport of polychlorinated biphenyls (PCBs) from the New Bedford, MA. municipal landfill. This landfill has been used for the disposal of PCB waste materials for many years. It is located in a wetland area. There is evidence of transport of PCBs in the shallow ground water to the northwest of the landfill, but the extent of transport is relatively minor, being confined to near surface waters very near the landfill. Drinking waters are unaffected. Aquatic and terrestrial organisms in the vicinity are accumulating some PCB; however, levels of contamination are not excessively high. There is evidence to indicate airborne transport may be a principal mode of movement of PCB from the landfill during the warm months. At one time, in excess of 1.0 migrogram/cu m of PCB was detected in the ambient air over this landfill.

TITLE	Environmental Chemicals: Human and Animal Health (Proceedings) Held at Fort Collins, Colorado on August 7-11, 1972
CORPORATE SOURCE	Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.
SPONSOR	Colorado State Univ., Fort Collins. Inst. of Rural Environmental Health.
REPORT NUMBER	PB-270 648/9 (NTIS); EPA/540/9-72/015 (EPA)
REPORT DATE	Aug 72 236p
NOTE	Sponsored in part by Colorado State Univ., Fort Collins. Inst. of Rural Environmental Health.
ABSTRACT	Partial contents: Environmental geochemistry in Missouri; Trace elements in water; Mercury as an environmental pollutant; Molybdenum as an environmental pollutant; Lead in soils and plants; Heavy metal poisonings in animals; Environmental chemicals and carcinogenesis; Polychlorinated biphenyls (PCB's) in humans; Epidemiology of poisoning by chemicals; Monitoring of environmental toxicants; Carbon monoxide as a national problem; Nitrates and water quality; Teratogenesis and mutagenesis of environmental chemicals.
TITLE	Environmental Levels of PCB in Great Lakes Fish
AUTHOR	Straub, Conrad P. ; Sprafka, J. Michael
PERFORMING ORGANIZATION	Minnesota Univ., Minneapolis. School of Public Health.
SPONSOR	Environmental Research Lab.-Duluth, MN.
REPORT NUMBER	PB83-264481 (NTIS); EPA-600/3-83-094 (EPA) EPA-R-806 282 (EPA Contract Number)

REPORT DATE 1 Jun 82 70p

ABSTRACT This report reviews and evaluates previously reported PCB levels in a variety of fish sampled from various locations in the Great Lakes. Higher concentrations in fish appear to be related to near-shore sampling where higher exposure to bottom sediments occurs to the flora and fauna comprising the food chains for the specific fish collected. Highest concentrations of PCBs were found in lake trout and fat trout taken from Lake Superior and in fish collected from the lower end of Lake Michigan. There is a need to identify past and/or present sources contributing PCB contaminants to the off-shore areas as well as to identify major sources of runoff contributing PCBs to the waters of the Great Lakes system. Additional information as to food-chain constituents is needed to more readily assess prey-predator relationships in the various regions of the system.

TITLE Environmental Management Report Update Region 10, 1985
Environmental Protection Agency, Seattle, WA. Region X.

REPORT NUMBER PB86-110046/XAB (NTIS); EPA/910/9-85/130 (EPA)

REPORT DATE Sep 85 66p

NOTES See also PB85-132710.

ABSTRACT The 1985 update to the Region 10 Environmental Management Report of 1983 describes work planned during Fiscal 86 in high priority efforts by the States of the Pacific Northwest and Region 10 to address current and emerging environmental problems. Because those problems the authors now feel merit priority status are not the same problems the authors discussed in 1983 and 1984, the organization of this 1985 update differs. Where possible, environmental problems were discussed collectively by media. For example, the general topic of Pesticides and Toxic Substances, identified as a separate priority problem in 1983, is addressed this year in media-related sections on Groundwater and Air Contamination. Similarly, Fishery Damage is discussed this year as part of the placer mining and nonpoint source problem discussions. The authors also took a different approach to ranking the significance of each problem this year. The Management Team assessed each environmental problem independently according to four criteria: (1) number of persons exposed, (2) human health risk, (3) ecological risk, and (4) the level of public concern. They were also asked to weigh each of the four criteria. The attached environmental priority list presents the results of this exercise. The top priority - hazardous waste contamination of groundwater.

TITLE Environmental Management Report, FY 1983
Environmental Protection Agency, Philadelphia, PA. Region III.

REPORT DATE May 83 225p

NOTE See also PB83-258509. Color illustrations reproduced in black and white.

ABSTRACT This report describes the environmental problems found in Region 3, which includes Delaware, Maryland, Pennsylvania, Virginia, West Virginia and the District of Columbia. The most significant Regional problems include hazardous waste dump and disposal sites, the siting of new hazardous waste facilities, ozone and SO2 air pollution, surface water contamination by acid mine drainage and non-point sources, PCB contamination incidents, persistant violations with small water supplies and potential groundwater contamination.

TITLE Environmental Progress and Challenges: An EPA (Environmental Protection Agency) Perspective

AUTHOR Crampton, L. S. W. ; Kelly, C. C. ; Hiemstra, S. L.

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT DATE Jun 84 125p

NOTE Color illustrations reproduced in black and white.

ABSTRACT This report presents the Environmental Protection Agency's (EPA's) assessment of the progress we have made as a Nation in improving the quality of the air we breathe, the water we depend on, and the land where we live. More importantly, it presents EPA's agenda for restoring and protecting these resources from past and future environmental hazards.

TITLE Environmental Transport and Transformation of Polychlorinated Biphenyls

AUTHOR Leifer, A. ; Brink, R. H. ; Thom, G. C. ; Partymiller, K G.

CORPORATE SOURCE Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

REPORT NUMBER PB84-142579 (NTIS); EPA-560/5-83-025 (EPA)

REPORT DATE Dec 83 206p

ABSTRACT

This report summarizes the environmental transport and transformation of polychlorinated biphenyls and contains nine separate chapters describing water solubility and octanol/water partition coefficient, vapor pressure, Henry's law constant and volatility from water, adsorption (sorption) to soils and sediments, bioconcentration in fish, atmospheric oxidation, hydrolysis and oxidation in water, photolysis, and biodegradation. In the preparation of each of these chapters, the emphasis has been on obtaining experimental data on environmentally relevant rate constants and equilibrium constants for these processes/properties for individual PCB congeners and Arochlors. If no experimental data were found, then estimation techniques were used wherever possible to obtain values for the rate constants or equilibrium constants for each individual congener or for groups of congeners (i.e., for monochloro-, dichloro-, trichloro-, etc., biphenyls). It must be emphasized that these estimates of rates for transport and transformation involved simplifying assumptions and thus these data should not be regarded as precise but rather as a best estimate based on the available data.

TITLE Enzyme-Based Detection of Chlorinated Hydrocarbons in Water (Rept. for Oct 82-Jul 83)

AUTHOR Offenhartz, B. H. ; Lefko, J. L.

PERFORMING ORGANIZATION JRB Associates, Inc., McLean, VA.

SPONSOR Environmental Protection Agency, Edison, NJ. Hazardous Waste Engineering Research Lab.

REPORT NUMBER PB85-191715/XAB (NTIS): EPA/600/2-85/048 (EPA)
EPA-68-03-3113 (EPA Contract Number)

REPORT DATE Apr 85 51p

NOTES Also pub. as B and M Technological Services, Inc., Cambridge, MA. rept. no. B/M-EPA-82-01.

ABSTRACT

An enzyme-based approach for detecting hazardous levels of high molecular weight chlorinated hydrocarbons in natural waters has been explored. An extensive review of the literature indicated that the enzymes, lactate dehydrogenase, carbonic anhydrase, hexokinase, phosphorylase and an ATPase are suitable for field method development. Lactate dehydrogenase (LDH) was chosen to develop a method that promises rapid, reliable and cost-effective detection. The LDH catalyzed reaction is used to detect chlorinated hydrocarbons, which reduce the rate of the reaction by reversibly inhibiting the enzyme. The analysis uses pH detection and takes 5 minutes. So far, the LDH method has been used to detect aldrin, toxaphene, DDT, PCBs, pentachlorophenol and 2,4,5,-T at the parts per million level. A review of the literature suggests that most organochlorine pesticides, PCBs, polychlorinated phenols and chlorophenoxy derivatives can be detected by the LDH method. Preliminary investigations of potential interferants suggest that the LDH method selectively detects chlorinated hydrocarbons. Work was begun on immobilizing the enzyme for incorporation in water monitor and field detector designs. The LDH method shows potential for use in field devices and for processing extracts of soils and wastes, as well as water samples. These method adaptations are recommended for future work.

TITLE

EPA (Environmental Protection Agency) Method Study 28, PCB's (Polychlorinated Biphenyls) in Oil (Project rept. Sep 81-May 84)

AUTHOR

Sonchik, S. M. ; Ronan, R. J.

PERFORMING RGANIZATION

Versar, Inc., Springfield, VA.

SPONSOR

Environmental Monitoring and Support Lab. - Cincinnati, OH. Quality Assurance Branch.

REPORT NUMBER

PB85-115178 (NTIS); EPA/600/4-84/078 (EPA)
EPA-68-03-3006 (EPA Contract Number)

REPORT DATE

Oct 84 91p

ABSTRACT

This report describes the experimental design and the results of the validation study for two analytical methods to detect polychlorinated byphenyls in oil. The methods analyzed for four PCB Aroclors (1016, 1242, 1254, and 1260), 2-chlorobiphenyl, and decachlorobiphenyl. The first method consisted in diluting the oil in hexane and analyzing by gas chromatography using an electrolytic conductivity detector in separating with sulfuric acid extraction or with column chromatography, and analysing by gas chromatography using and electron capture detector. Four oil types were used in this study: capacitor fluid, hydraulic fluid, transformer oil, and waste oil. Each oil was spiked at six concentration levels with comprised three Youden pairs. Capacitor fluid was spiked with Araclor 1016, hydraulic fluid with Aroclor 1242 and 2-chlorobiphenyl, transformer oil with Aroclor 1260 and decachlorobiphenyl, and waste oil with Aroclor 1254. Statistical analyses and conclusions presented in this report are based on analytical data obtained by eighteen participating laboratories and two volunteer laboratories. The two methods assessed quantitatively with respect to

the precision and accuracy that can be expected for each. In addition, various aspects of the methods discussed, including such topics as methods detection limits, sample stability interferences, and qualitative assessment of the methods based upon comments by the participating laboratories.

TITLE EPA (Environmental Protection Agency) Method Study 18, Method 608-Organochlorine Pesticides and PCB's (Final rept. Sep 78-Dec 81)

AUTHOR Millar, J. D. ; Thomas, R. E. ; Schattenberg, H. J.

PERFORMING ORGANIZATION Southwest Research Inst., San Antonio, TX.

SPONSOR Environmental Monitoring and Support Lab., Research Triangle Park, NC. Quality Assurance Branch.

REPORT NUMBER PB84-211358/XAB (NTIS); EPA-600/4-84-061 (EPA)
EPA-68-03-2606 (EPA Contract Number)

REPORT DATE Jun 84 197p

ABSTRACT This report describes the results obtained and data analysis from an interlaboratory evaluation of EPA Method 608 (Organochlorine Pesticides and PCBs). The method is designed to analyze for 16 single-compound pesticides, chlordane, toxaphene, and seven Aroclor formulations in water and wastewater. All were included in this study except endrin aldehyde, sufficient quantities of which could not be obtained. The study design required the analyst to dose six waters with eight analytical groups, each at six levels. The six dosing levels of each substance or combination represented three Youden pairs, one each at a low, an intermediate, and a high level. The six waters used were a laboratory pure water, a finished drinking water, and a surface water, all collected by the participant, and three low-background industrial effluents (SICs 2869 and 2621). A total of 22 laboratories participated in the study. The method is assessed quantitatively with respect to the accuracy and precision that can be expected. In addition, results of method detection limit studies are included as are qualitative assessments of the method based upon comments by the participating laboratories.

TITLE Equilibrium Model of Fate of Microcontaminants in Diverse Aquatic Food Chains
(Journal article)

AUTHOR Thomann, R. V.

PERFORMING ORGANIZATION Manhattan Coll., Bronx, NY.

SPONSOR Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

REPORT NUMBER PB81-23251 (NTIS); EPA-600/J-81-295 (EPA)

REPORT DATE 1981 20p

NOTE Pub. in Canadian Jnl. of Fisheries and Aquatic Sciences, v38 n3 p280-296 1981.

ABSTRACT Bioconcentration and bioaccumulation factors of PCB, 239Pu, and 137Cs are compiled from the literature as a function of organism size. The distribution of field-observed bioaccumulation factors varies markedly between each substance but similarly to order of magnitude within each substance across diverse food chains. It can be inferred from the literature that PCB levels in top predators are due primarily to food chain transfer. A steady state compartment food chain model is derived for estimation of the relative effect of uptake directly from water versus food chain transfer. The model food chain transfer number f, given by alpha C/K + G for alpha = chemical absorption efficiency, C = specific consumption, K = excretion rate, and G = net organism growth rate indicates the degree of food chain accumulation. For f > 1, food chain transfer is significant; for f < 1, uptake from water is more significant. Application of the model suggests that (a) PCB body burden in top predators is due almost entirely to consumption of contaminated prey, (b) for 239Pu all of the body burden is due to uptake from the water only, and (c) observed 137Cs concentration factors are due principally to food chain transfer with a high dependence on the salinity-dependent phytoplankton adsorption.

TITLE Estimation of Polychlorinated Biphenyls in the Presence of DDT-Type Compounds
(Environmental monitoring series (Final))

AUTHOR Brownrigg, J. T. ; Hornig, A. W.

PERFORMING ORGANIZATION Baird-Atomic, Inc., Bedford, Mass.

REPORT NUMBER PB-233 599/0 (NTIS); EPA-670/4-74-004 (EPA)
EPA-68-01-0082 (EPA Contract Number)

REPORT DATE Jun 74 100p

ABSTRACT Earlier studies suggested that the low temperature luminescence properties of PCB's (polychlorinated biphenyls) and DDT compounds could be used to identify these compounds singly or in mixtures. The present investigation was undertaken to develop a relatively simple, rapid method for estimating these compounds in water. The emphasis in this procedure has been on the inherent sensitivity and specificity of luminescence, avoiding chemical separation where possible. The present procedure involves collection of grab samples followed by extraction, drying, concentration, and redilution in a second solvent suitable for luminescence measurement at 77K. Studies include the determination of recoveries and detection sensitivities for some of the compounds of interest and also analyses of several environmental waters. (Modified author abstract)

TITLE Evaluation of a New Microvolume 3HSc Electron Capture Detector and Ancillary Data System for Pesticide Residue Analysis

AUTHOR Hanisch, Robert C. ; Lewis, Robert G.

CORPORATE SOURCE Health Effects Research Lab., Research Triangle Park, N.C. Analytical Chemistry Branch.

REPORT NUMBER PB-276 990/9 (NTIS); EPA/600/2-78/010 (EPA)

REPORT DATE Feb 78 35p

ABSTRACT The performance of a linearized 3HSc electron capture detector (ECD) and its ancillary data system was evaluated for use in the analysis of pesticide residues. Serial dilutions of pesticide standards were used to determine the maximum linear range and sensitivity of the detector. This detector was found to have a significantly greater linear range for the test compounds than a linearized 63Ni electron capture detector evaluated. The sensitivity was only marginally better than the 63Ni ECD.

TITLE Evaluation of Chlorinated Hydrocarbon Catalytic Reduction Technology (Final rept. May 77-Feb 78)

AUTHOR Erickson, Mitchell D. ; Estes, Eva D.

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, N.C.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, N.C.

REPORT NUMBER PB-283 646/8 (NTIS); EPA/600/2-78/059 (EPA)
EPA-68-02-2612 (EPA Contract Number)

REPORT DATE Mar 78 49p

ABSTRACT The report gives results of a laboratory evaluation of a control technique developed for the EPA for the catalytic reduction of chlorinated hydrocarbons (specifically PCBs and chlorinated pesticides such as heptachlor and endrin). The technique involves elution of polluted water at ambient temperature and at neutral pH through a column containing a mixture of sand and copper iron catalyst. The evaluation found that PCBs are not detectably reduced, but are chromatographically eluted from the column in order of increasing chlorination. The catalyst was found to partially reduce heptachlor and endrin. The possibility of chromatographic elution by endrin and/or heptachlor was briefly investigated using miniature columns and found to be insignificant. The report also describes the observation of an additional on-site demonstration of the catalytic reduction technology, including observation of the test procedure, gas chromatography with electron capture detection, and subsequent laboratory GC/MS analysis of transported samples. An evaluation of the reports generated during the development of the catalytic reduction technique is presented. It discusses errors and emissions in the developmental experimental protocol which led to the erroneous conclusions that the technique was applicable to PCBs.

TITLE Evaluation of Collection Media for Low Levels of Airborne Pesticides

AUTHOR Rhoades, John W. ; Johnson, Donald E.

PERFORMING ORGANIZATION Southwest Research Inst., San Antonio, Tex.

SPONSOR Health Effects Research Lab., Research Triangle Park, N.C.

REPORT NUMBER PB-275 668/2 (NTIS); EPA/600/1-77/050 (EPA)
EPA-68-02-2235 (EPA Contract Number)

REPORT DATE Oct 77 140p

NOTE See also report dated May 72, PB-214 008.

ABSTRACT Polyurethane foam plugs, Chromosorb 102, and Tenax GC have all been found to be better sorbents than cottonseed oil for high volume collection of airborne chlorinated and organophosphate pesticides and polychlorinated biphenyls. None of these were satisfactory for the recovery of carbofuran or carbaryl. A new high volume collecting module concept capable of use with polyurethane foam, porous polymer beads, liquid coated glass beads, or other solids was developed. The entire collector is Soxhlet extracted and no disassembly is required. The collector-extractor is ready for reuse as soon as residential solvent is removed.

TITLE Evaluation of Gel Permeation Chromatography for Clean Up of Human Adipose Tissue Samples for GC/MS Analysis of Pesticides and Other Chemicals (Journal article)

AUTHOR MacLeod, Kathryn E. ; Hanisch, Robert C. ; Lewis, Robert G.

CORPORATE SOURCE Health Effects Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-246836 (NTIS); EPA-600/J-82-005 (EPA)

REPORT DATE 28 Dec 81 5p

NOTE Pub. in Jnl. of Analytical Toxicology, v6 p38-40 Jan/Feb 82.

ABSTRACT Gel permeation chromatography (GPC) has been evaluated for clean up of human adipose tissue sample extracts in preparation for confirmatory analysis by gas chromatography-mass spectrometry (GC/MS). Studies were conducted with standard solutions, fortified chicken fat, and actual human adipose tissue samples. Nearly quantitative removal of lipid material was achieved with minimal losses of 16 organochlorine pesticides and metabolites: two polychlorinated biphenyl (PCB) mixtures, two chlorinated napthalene (PCN) mixtures, and a polybrominated biphenyl (PBB) mixture. Mass spectra free from interferences were obtained over the mass range from 46 m/z to 560 m/z.

TITLE Evaluation of Methods for the Determination of Total Organic Halide in Water and Waste
(Final rept. Aug 82-Jul 84)

AUTHOR Cole, T. F. ; Berry, A. M. ; Wilson, R. L.

PERFORMING ORGANIZATION Battelle Columbus Labs., OH.

SPONSOR Environmental Monitoring and Support Lab.-Cincinnati, OH.

REPORT NUMBER PB85-166304/XAB (NTIS); EPA/600/4-85/011 (EPA)
EPA-68-03-3155 (EPA Contract Number)

REPORT DATE Feb 85 122p

ABSTRACT Various methods for the determination of total organic halides (TOX) in groundwater and in waste oil samples have been evaluated. Of three inorganic halide species generation approaches and three inorganic halide determinative techniques evaluated for groundwater analyses, one combined approach using Schoeniger flask oxidation with colorimetric chloride determination was chosen for laboratory validation and method detection limit studies. Groundwater samples were also analyzed for TOX using neutron activation analysis. A method for analysis of oil samples which uses the sodium biphenyl reagent and a colorimetric chloride method was found to be unsatisfactory for the analysis of various oils spiked with PCBs due to interferences in the colorimetric determinative step which resulted in recoveries greater than 100%.

TITLE Evaluation of PCB Destruction Efficiency in an Industrial Boiler (Final rept.)

AUTHOR Hall, Joanna ; Record, Frank ; Wolf, Paul ; Hunt, Gary ; Zelenski, Steven

PERFORMING ORGANIZATION GCA Corp., Bedford, MA. GCA Technology Div.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-224940 (NTIS); EPA-600/2-81-055A (EPA)
EPA-68-02-3168

REPORT DATE Apr 81 172p

NOTE See also PB81-187270.

ABSTRACT The report describes the evaluation program undertaken to determine the polychlorinated biphenyl (PCB) destruction efficiency during a May 1980 verification co-firing of waste oil containing approximately 500 ppm of PCBs, in accordance with applicable state and federal regulations, in a high-efficiency industrial boiler owned and operated by General Motors Corporation at Bay City, MI. Also investigated was the environmental and workplace impact which occurs during the handling and combustion of PCB-contaminated waste oils.

TITLE Evaluation of PCB Destruction Efficiency in an Industrial Boiler: Audit Report

(Final rept. Aug-Sep 80)

AUTHOR Collins, P. F. ; Hunt, G. F.

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, NC.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB81-187270 (NTIS); EPA-600/2-81-055B (EPA)
EPA-68-02-3146 (EPA Contract Number)

REPORT DATE Apr 81 35p

ABSTRACT The report gives results of systems audits and an evaluation of the quality of data obtained by GM and GCA in the analysis of a test burn oil for PCB conducted by Research Triangle Institute. Audits included inspection of documentation and records, discussion of analytical methodology and data with personnel of the organization being audited, and independent data reduction. The analytical data reported by GM and GCA were subsequently confirmed by separate analyses by EPA's Health Effects Research Laboratory (RTP) and are reported in Appendix A.

TITLE Evaluation of Polyurethane Foam for Sampling of Pesticides, Polychlorinated Biphenyls and Polychlorinated Naphthalenes in Ambient Air (Journal article)

AUTHOR Lewis, Robert G. ; Brown, Alan R. ; Jackson, Merrill D.

CORPORATE SOURCE Health Effects Research Lab., Research Triangle Park, N.C. Environmental Toxicology Div.

REPORT NUMBER PB-278 382/7 (NTIS); EPA/600/J-77/106 (EPA)

REPORT DATE 11 Jul 77 7p

NOTE Presented at the National Meeting of the American Chemical Society (173rd), New Orleans, La. 25 Mar 77. (Paper no. 78, Div. of Pesticide Chemistry).
Pub. in Analytical Chemistry, v49 n12 p1668-1672 1977.
Not available NTIS.

ABSTRACT Polyurethane foam has been evaluated for use in a high-volume air sampler to collect a broad spectrum of pesticides, polychlorinated biphenyls (PCBs) and polychlorinated naphthalenes (PCNs). The sampler draws air through a glass module equipped with a particulate filter and a polyurethane foam vapor trap at flow rates which can be controlled from 100 to 250 L/min. Up to 300 cu m of air can be sampled in a 24-hour day, providing theoretical detection limits of less than 0.1 ng/cu m for some individual compounds. Extraction and clean-up methodology for gas chromatographic analysis are uncomplicated. Collection efficiencies have been determined for several organochlorine and organophosphate pesticides, PCBs and PCNs. (Copyright (c) 1977 by the American Chemical Society.)

TITLE Evaluation of Protocols for Pesticides and PCB's in Raw Wastewater (Final rept. Jun-Oct 78)

AUTHOR Caragay, Alegria B. ; Levins, Philip L.

PERFORMING ORGANIZATION Little (Arthur D.), Inc., Cambridge, MA.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB80-133184 (NTIS); EPA/600/2-79-166 (EPA)
EPA-68-01-3857 (EPA Contract Number)

REPORT DATE Nov 79 112p

ABSTRACT The general EPA protocol for screening industrial effluents for priority pollutants (Federal Register 38, No. 75, Part II), has been tested for its applicability to the analysis of the priority pollutant pesticides and PCB's in raw wastewater. Raw wastewater from the municipal sewage treatment plant in Brockton, Massachusetts was dosed with 1-30 ppb of the priority pollutant pesticides and PCB's. The overall procedure evaluated consists of the following steps: extraction with 15% methylene chloride/hexane with centrifugation to break up the emulsion, concentration by Kuderna-Danish evaporation, removal of interferences by acetonitrile partition, chromatography on Florisil and Sephadex LH-20, and sulfur removal by treatment with mercury. Samples were assayed by gas chromatography using an electron capture detector. The data obtained show that the Kuderna-Danish evaporation step could be a significant source of sample loss unless the evaporation process is carried out at a fast rate. Treatment with mercury effectively cleans up the extracts with no significant loss of pesticides. Sample clean-up on a Sephadex LH-20 is recommended as an alternative to the Florisil column clean-up procedure. The method tested works well for parts per billion determination.

TITLE Evaluation of Solid Adsorbents for Collecting Atmospheric Chlorinated Hydrocarbons

AUTHOR Bidleman, Terry F. ; Billings, W. Neil ; Simon, Charles G.

PERFORMING ORGANIZATION South Carolina Univ., Columbia. Dept. of Chemistry.

SPONSOR Environmental Sciences Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB80-198526 (NTIS); EPA-600/2-80-167 (EPA)
EPA-R-804716 (EPA Contract Number)

REPORT DATE Jul 80 67p

ABSTRACT The comparative efficiency of polyurethane foam (PUF) and Tenax-GC resin for collecting polychlorinated biphenyls (PCB) and chlorinated pesticides from 300-1600 cu m air was determined by side-by-side sampling with each adsorbent in the city of Columbia, South Carolina.

TITLE Evaluation of Suspected Environmental Contamination of the Hemlock, Michigan Area

CORPORATE SOURCE Environmental Protection Agency, Chicago, IL. Region V.

REPORT NUMBER PB81-112526 (NTIS); EPA-905/4-80-009 (EPA)

REPORT DATE Sep 80 77p

ABSTRACT The Environmental Protection Agency conducted an investigation in the Hemlock, Michigan area to determine if a chemical contamination problem existed there. This investigation was prompted by complaints of human and animal health problems in that area, which were alleged to be due to toxicants in aquifers used for drinking water supplies. In this study approximately ninety samples, including water, soil, animal tissues, and household dust samples, were analyzed for a wide variety of parameters. Tests conducted on the samples included arsenic, cadmium, lead, bromide, chloride, PCBs, PBBs, pesticides, dioxin, and GC/MS scans for organics. No evidence of a chemical contamination problem in the Hemlock, Michigan area was found.

TITLE	Evaluation of Tests with Early Life Stages of Fish for Predicting Long-Term Toxicity (Journal article)
AUTHOR	McKim, James M.
CORPORATE SOURCE	Environmental Research Lab.-Duluth, Minn.
REPORT NUMBER	PB-272 769/1 (NTIS); EPA/600/J-77/046 (EPA)
REPORT DATE	17 Jan 77 10p
NOTE	Pub. in Jnl. of Fisheries Research Board of Canada, v34 n8 p1148-1154 1977.

ABSTRACT

Partial and complete life-cycle toxicity tests with fish, involving all developmental stages, have been used extensively in the establishment of water-quality criteria for aquatic life. During extended chronic exposures of fish to selected toxicants, certain developmental stages have frequently shown a greater sensitivity than others. In 56 life-cycle toxicity tests completed during the last decade with 34 organic and inorganic chemicals and four species of fish, the embryo-larval and early juvenile life stages were the most, or among the most, sensitive. Tests with these stages can be used to estimate the maximum acceptable toxicant concentration (MATC) within a factor of two in most cases. Therefore, toxicity tests with these early life stages of fish should be useful in establishing water-quality criteria and in screening large numbers of chemicals.

TITLE Evaluation of the Methods Used to Determine Potential Health Risks Associated with Organic Contaminants in the Great Lakes Basin

AUTHOR Schuman, L. M. ; Straub, C. P. ; Mandel, J. S. ; Norsted, S. ; Sprafka, J. M.

PERFORMING ORGANIZATION Minnesota Univ., Minneapolis. School of Public Health.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-128305 (NTIS); EPA-600/3-84-002 (EPA)
EPA-R-806282 (EPA Contract Number)

REPORT DATE Jan 84 469p

NOTE Portions of this document are not fully legible.

ABSTRACT These results suggest that 'lake-bordering' populations (i.e., white populations) experience higher rates of mortality due to stomach and esophageal cancers as compared to 'non-lake bordering' counties. This trend is consistent when the potential confounding factor of large urban centers is removed.

TITLE Evaluation of the Problem Posed by In-Place Pollutants in Baltimore Harbor and Recommendation of Corrective Action (Final rept)

PERFORMING ORGANIZATION Trident Engineering Associates, Inc., Annapolis, Md.

SPONSOR Maryland Univ., Cambridge. Horn Point Environmental Labs.; Environmental Protection Agency, Washington, D.C. Office of Water Planning and Standards.

REPORT NUMBER PB-283 178/2 (NTIS); EPA/440/5-77/015B (EPA)
EPA-68-01-1965 (EPA Contract Number)

REPORT DATE Sep 77 87p

NOTE Prepared in cooperation with Maryland Univ., Cambridge. Horn Point Environmental Labs.

ABSTRACT Previous studies had indicated that Baltimore harbor is heavily polluted. To assess the impact of in-place pollutants on the harbor, the Contractor sampled and analyzed bottom sediments, the water column, and the interstitial water, using bulk sediment analyses, elutriate tests, and bioassays. On the basis of the results of this investigation, it is possible to divide the harbor into four zones; highly toxic, moderately toxic, low toxicity, and slightly toxic. The biota are being stressed by in-place pollutants. Benthic organisms suffer the greatest damage, the intensity varying with the location in the zones of toxicity. Pelagic species are damaged to a lesser extent. Although feasible corrective actions do exist, they would offer only a temporary solution. A permanent solution involves the corrective action plus elimination of pollutant discharges into the harbor. A companion report contains the appendices and details of the testing and analysis.

TITLE Evaluation of the Problem Posed by In-Place Pollutants in Baltimore Harbor and Recommendation of Corrective Action - Appendices

PERFORMING ORGANIZATION Trident Engineering Associates, Inc., Annapolis, Md.

SPONSOR Maryland Univ., Solomons. Center for Environmental and Estuarine Studies.; Environmental Protection Agency, Washington, D.C. Office of Water Planning and Standards.

REPORT NUMBER PB-282 574/3 (NTIS); EPA/440/5-77/015A (EPA)
EPA-68-01-1965 (EPA Contract Number)

REPORT DATE Sep 77 239p

NOTE Prepared in cooperation with Maryland Univ., Solomons. Center for Environmental and Estuarine Studies.

ABSTRACT This report presents the results of a study of the in-place pollutants in Baltimore Harbor and their effect on water quality. This part of the report contains the appendices.

TITLE Evaluation of Three Fish Species as Bioassay Organisms for Dredged Material Testing (Final rept.)

AUTHOR Rubinstein, N. I. ; Gilliam, W. T. ; Gregory, N. R.

PERFORMING ORGANIZATION Environmental Research Lab., Gulf Breeze, FL.

SPONSOR Army Engineer Waterways Experiment Station, Vicksburg, MS.

REPORT NUMBER AD-A153 983/XAB (NTIS); EPA-600/X-83-062 (EPA)

REPORT DATE Dec 84 27p

ABSTRACT Three fish species, Cyprinodon variegatus, Fundulus similis, and Menidia menidia, were evaluated to determine which is most suitable as a bioassay organism for solid phase testing of dredged material. Acute toxicity and bioaccumulation of polychlorinated biphenyls (PCBs) were monitored for 52 days of exposure to two types of dredged material collected from the New York harbor. Cyprinodon variegatus displayed the most consistent accumulation of PCBs. However, no definition statement can be made regarding acute toxicity response because of poor control survival, Review of the literature indicates the M. menidia is the most sensitive of the three species examined and, consequently, it is felt that this species should be strongly considered as a candidate for solid testing. Originator supplied keywords: Biological assay, Dredged material, Fishes, Effect of water pollution on, Pollution--Research, Water--Pollution--Environmental aspects.

TITLE Experimental Hepatic Porphyria Induced by Polychlorinated Biphenyls

AUTHOR Goldstein, Joyce A. ; Hickman, Patricia ; Jue, Danny L.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Chamblee Toxicology Lab.

REPORT DATE 30 Aug 73 12p

NOTE Pub. in Toxicology and Applied Pharmacology 27, p437-448 1974. Included in the report, Journal Articles on Toxicology. Group 2, PB-278 094.

REPORT NUMBER PB-278 094 (NTIS)

ABSTRACT Aroclor 1254, which consists of a mixture of polychlorinated biphenyls (PCBs) containing 54% chlorine, produced an experimental hepatic porphyria in rats resembling hexachlorobenzene poisoning and human porphyria cutanea tarda. The PCB-induced porphyria is characterized by delayed development, increased excretion of urinary uroporphyrins, accumulation of 8- and 7-carboxyporphyrins in the liver and increased drug-metabolizing capacity of the liver. Cytochrome P-450 and microsomal heme were increased maximally at 1 week, in the absence of an increase in the rate-limiting enzyme in heme synthesis, delta-aminolevulinic acid (ALA) synthetase. Induction of ALA synthetase and porphyria occurred later, after2-7 months' exposure to PCBs. No induction of ALA synthetase could be demonstrated prior to the onset of porphyria. Marked induction of ALA synthetase occurred 5 hr after large single doses of Aroclor 1254; however, the doses required were larger than those used to produce porphyria when administered chronically, and induction appeared to be related to the marked increase in cytochrome P-450 seen 24 hr after administration of the drug.

TITLE Extent of Reversibility of Polychlorinated Biphenyl Adsorption (Journal article)

AUTHOR Horzempa, L. M. ; Di Torso, D. M.

PERFORMING ORGANIZATION Manhattan Coll., Bronx, NY. Environmental Engineering and Science Program.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-123876 (NTIS); EPA-600/J-83-120 (EPA)
EPA-R-805229; EPA-r-807853 (EPA Contract Numbers)

REPORT DATE c1983 12p

NOTE Pub. in Water Research, v17 n8 p851-859 1983.
Not available from NTIS

ABSTRACT The extent of reversibility of PCB bonding to sediments has been characterized in studies on the partitioning behavior of a hexachlorobiphenyl isomer. Linear non-singular isotherms have been observed for the adsorption and desorption of 2,4,5,2',4',5' hexachlorobiphenyl (HCBP) to 1100 ppm sediment suspensions. Evidence from consecutive desorption studies suggests that while HCBP adsorption may ultimately be reversible, release from sediments appeared to involve desorption along two distinct isotherms. These results have been interpreted in terms of possible similarities between the sorption properties observed in the distilled water systems of the present study and PCB bonding processes in natural water systems.

TITLE Facilities Evaluation of High Efficiency Boiler Destruction PCB Waste (Research brief Jan-Apr 80)

AUTHOR Cotter, J. E. ; Johnson, R. J.

PERFORMING ORGANIZATION TRW, Inc., Redondo Beach, CA.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB81-178287 (NTIS); EPA-600/7-81-031 (EPA);
EPA-68-02-3174 (EPA Contract Number)

REPORT DATE Mar 81 45p

ABSTRACT The report gives results of an evaluation of destruction in two different high-efficiency boilers (as an alternative to landfill disposal) of waste (a rendering plant byproduct, yellow grease) found to be contaminated by PCBs from a transformer leak. (The PCB content--under 500 ppm--determines the disposal method under 40 CFR Part 761.) At the first boiler: (1) logistics and fuel handling requirements were found to be feasible to set up in a short time; (2) boiler size and residence time were determined to be likely to allow high destruction efficiency; (3) with 99.9% destruction of PCBs, downwind concentration was estimated to be less than CSHA limits for industrial exposure; and (4) fuel characteristics of the yellow grease were used to support the recommendation for 100% grease fired as fuel. At the second boiler: (1) the size and facilities were determined to satisfy all prerequisites for high efficiency boilers (40 CFR Part 761); (2) best operation was by blending the waste with the normal fuel oil supply; and (3) a 30% waste blend was found to be completely miscible and feasible with respect to logistical support. A verification test burn was recommended and outlined for either candidate site. Current EPA protocol and policy developments for PCB destruction were found to be appropriate for the preparation of a candidate facility test plan and an example public notice.

'ITLE Fate of Environmental Pollutants (Journal article)

AUTHOR Pritchard, P. H.

CORPORATE SOURCE Environmental Research Lab., Gulf Breeze, FL.

REPORT NUMBER PB86-101060/XAB (NTIS); EPA/600/J-85/148 (EPA)

REPORT DATE 1985 12p

NOTES Pub. in Jnl. of the Water Pollution Control Federation, v57 n6 p658-667 Jun 85.

ABSTRACT Published literature on the environmental fate of pollutants published during 1984 are reviewed. Short excerpts are presented from each reference covering such areas as photolysis, biodegradation, hydrolysis, sorption, and volatility for pollutants including pesticides, hydrocarbons, heavy metals, polynuclear hydrocarbons, and other toxic organic chemicals.

TITLE Fate of Selected Toxic Compounds Under Controlled Redox Potential and pH Conditions in Soil and Sediment-Water Systems (Final rept. Oct 79-Oct 8)

AUTHOR Gambrell, R. P. ; Taylor, B. A. ; Reddy, K. S. ; Patrick, Jr, W. H.

PERFORMING ORGANIZATION Louisiana State Univ., Baton Rouge. Center for Wetland Resources.

SPONSOR Environmental Research Lab., Athens, GA.

REPORT NUMBER PB84-140169 (NTIS); EPA-600/3-84-018 (EPA)
EPA-R-807018 (EPA Contract Number)

REPORT DATE Jan 84 112p

ABSTRACT A study was conducted to determine the effects of pH and redox potential conditions on the degradation of selected synthetic organics. Also, the effects of these physicochemical parameters as well as other physical and chemical properties of soils and sediment-water systems on the adsorption of selected organics were measured. Compounds used in degradation studies included methyl parathion, 2,4-dichlorophenoxyacetic acid (2,4-D), and Aroclor 154 (a polychlorinated biphenyl formulation). Compounds used in adsorption studies included methyl parathion, 2,4-D, and pentachlorophenol. Soils and sediments used for both the degradation and adsorption studies were selected to include materials having a wide range of physical and chemical properties.

TITLE	Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup
AUTHOR	Gary L. Kelso, Mitchell D. Erickson, David C. Cox*
PERFORMING ORGANIZATION	Midwest Research Institute, Kansas City, Mo. 64110; Washington Consulting Group, Washington, D.C. 20006
SPONSOR	Field Studies Branch, U.S. EPA/OTS, Washington, D.C. 20460
REPORT NUMBER	EPA-560/5-86-017 (EPA) 68-02-3938 (EPA Contract Number)
REPORT DATE	May 1986

ABSTRACT

The purpose of this manual is to provide detailed, step-by-step quidance to EPA staff for using hexagonal grid sampling at a PCB spill site. Guidance is given for preparing the sample design; collecting, handling, and preserving the sample taken; maintaining quality assurance and quality control; and documentiong and reporting the sampling procedures used. An optional strategy for compositing samples is given in the appendix.

This is a companion document to the report "Verification of PCB Spill Cleanup by Sampling and Analysis" (EPA 560/5-85-026, August 1985, Second Printing). This "how-to" report concentrates on detailed guidance for field sampling personnel and does not attempt to provide background information on the techniques presented. The types of field sampling situations discussed in this manual are those typically found when a PCB spill results from a PCB article, PCB container, or PCB equipment spill. Unusual PCB spill situations, such a elongated spills on highways from a moving vehicle, large spills in waterways, and large, catastrophic spills, are not addressed.

TITLE Field Study to Obtain Trace Element Mass Balances at a Coal-Fired Utility Boiler
(Final rept. May 75-Sep 80)

AUTHOR Evers, Robert ; Banderfriff, V. E. ; Zielke, R. L.

PERFORMING ORGANIZATION Tennessee Valley Authority, Chattanooga. Div. of Energy Demonstrations and Technology.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB81-161861 (NTIS); EPA-600/7-80-171 (EPA)

REPORT DATE Oct 80 146p

ABSTRACT The report gives results of a study to identify mass flow rates of minor and trace elements from streams of a coal-fired utility boiler (Colbert Steam Plant Unit No. 1). This information was used to obtain a mass balance for 25 elements. The mass balances used inlet and outlet flows associated with three major pieces of equipment: the pulverizer, boiler, and electrostatic precipitator. This provided a mass balance for each element for the various parts of the system. Along with the trace elements which were being measured, organic samples were obtained and analyzed from various streams for polychlorinated biphenyls (PCBs) and polynuclear organic matter (POMs). Thus, the mass balance reflected a fairly complete picture of the boiler under normal operating conditions. The mass balances show that sampling techniques need to be improved. First, the analysis of the vapor-phase samples reported all concentrations below the detection limit for each element. Second, the mass balances of only 10 elements (representing 61% of the total ash flow) closed within + or - 10% for at least two of the three major pieces of the system.

TITLE Final Environmental Impact Statement for Proposed Arizona Hazardous Waste Management Facility

CORPORATE SOURCE Environmental Protection Agency, San Francisco, CA. Region IX.

SPONSOR SCS Engineers, Long Beach, CA.; Wirth Associates, Phoenix, AZ.; Arizona State Dept. of Health Services, Phoenix.; Bureau of Land Management, Phoenix, AZ.

REPORT NUMBER PB84-171636 (NTIS); EPA-909/9-83-002 (EPA)

REPORT DATE Jul 83 371p

NOTE See also PB84-171628. Sponsored in part by Arizona State Dept. of Health Services, Phoenix and Bureau of Land Management, Phoenix, AZ. Prepared in cooperation with SCS Engineers, Long Beach, CA. and Wirth Associates, Phoenix, AZ.

ABSTRACT The State of Arizona has asked to purchase a one-square mile parcel of land from the U.S. Bureau of Land Management for siting a state-owned contractor-operated hazardous waste facility. At BLM's request, EPA agreed to serve as lead agency in preparing the EIS on the proposed land transfer. This EIS addresses concerns related to selection of a facility site. Impacts related specifically to the design and operation of the facility itself would be addressed through future permits issued by EPA and the Arizona Department of Health Services. The final EIS addresses comments on the Draft EIS by presenting additional discussion of several major environmental issues. It also assesses the impacts of a representative 'high technology' facility, which uses a high temperature incinerator to dispose of PCB wastes and other incincerable hazardous wastes.

TITLE Fish, Wildlife, and Estuaries. Pesticide Residues in Estuarine Mollusks, 1977 versus 1972--National Pesticide Monitoring Program (Journal article (Final))

AUTHOR Butler, Philip A. ; Kennedy, Charles D. ; Schutzmann, Roy A.

CORPORATE SOURCE Environmental Research Lab., Gulf Breeze, FL.

REPORT NUMBER PB80-183395 (NTIS); EPA-600/J-78-168 (EPA)

REPORT DATE Dec 78 5p

NOTE Pub. in Pesticides Monitoring Journal v12 n3 p99-101, 3 Dec 78.

Bivalve mollusks were monitored for residues of 20 organochlorine and organophosphate pesticides and polychlorinated biphenyls in spring 1977 in 87 of the 181 estuaries routinely monitored on a monthly basis during 1965-72. DDT, the only pesticide detected in 1977, occurred at low levels in one estuary each on the Atlantic and Pacific coasts.

TITLE Follow-Up Study of the Distribution and Fate of Polychlorinated Biphenyls and Benzenes in Soil and Ground Water Samples After an Accidental Spill of Transformer Fluid

AUTHOR Moein, George J. ; Smith, Al J. ; Biglane, Kenneth E. ; Loy, Bill ; Bennett, Tom

CORRPORATE SOURCE Environmental Protection Agency, Atlanta, GA. Region IV.

REPORT NUMBER PB-288 484/9 (NTIS); EPA/904/9-76/014 (EPA)

REPORT DATE Jan 76 145p

ABSTRACT This technically oriented study was designed to derive a PCB concentration profile in a spill area two years after the occurrence of the spill. Many months of field work and laboratory analysis were spent to examine numerous environmental factors to determine the fate of PCB and benzenes in the natural environment. The area, under investigation for migration and/or degradation was found virtually unchanged while the solvent had continued to leach into the underground water. There was, however, no evidence of permanent environmental damage detected in the spill area.

TITLE Follow-up Study of the Distribution and Fate of Polychlorinated Biphenyls and Benzenes in Soil and Groundwater Samples After an Accidental Spill of Transformer Fluid
(Technical rept. 1973-76)

AUTHOR Smith, Jr., Al J. ; Moein, George J. ; Stewart, Peggy L.

CORPORATE SOURCE Environmental Protection Agency, Atlanta, Ga. Region IV.

SPONSOR Stewart Labs., Inc., Knoxville, Tenn.

REPORT DATE 1976 19p

NOTE Prepared in cooperation with Stewart Labs., Inc., Knoxville, Tenn. Presented to the 1976 National Conference on Control of Hazardous Material Spills, New Orleans, La.

ABSTRACT The report contains a brief discussion of the technical aspects of what happens to spill residuals after cleanup, and after a 3 year period. Biodegradation of PCB is considered as is the various effects of weather, climate, and soil dynamics.

TITLE Gaseous HCl and Chlorinated Organic Compound Emissions from Refuse Fired Waste-to-Energy Systems (Final rept.)

AUTHOR Nunn, A. B.

PERFORMING ORGANIZATION Scott Environmental Technology, Inc., Plumsteadville, PA.

SPONSOR Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Sciences Research Lab.

REPORT NUMBER PB86-145661/XAB (NTIS); EPA/600/3-84/094 (EPA)
EPA-68-02-3486 (EPA Contract Number)

REPORT DATE Jan 86 76p

NOTE Sponsored by Environmental Protection Agency, Research Triangle Park, NC. Atmospheric Sciences Research Lab.

ABSTRACT The emissions from a water wall mass fired municipal waste incinerator and a refuse derived fuel (RDF) fired incinerator were sampled for chlorinated organic compounds and hydrochloric acid (HCl). The sampling was performed to evaluate the extractive sampling methods used to measure the compounds. Sampling the chlorinated organic compound emissions was conducted using a modified version of the EPA Reference 5 Method, which included an XAD-2 resin cartridge. HCl was sampled with an impinger train using basic absorbing solutions. The recovered chlorinated organics were separated into chlorophenols, chlorobenzenes, poly-chlorinated biphenyls (PCBs), chlorinated dibenzo-p-dioxins (CDDs), and chlorinated dibenzofurans (CDFs), and quantitated. The results of the analysis are presented in terms of the compounds distributions' within the sampling systems as well as the emission rates.

TITLE Guidelines for the Disposal of PCBs (Polychlorinated Biphenyls) and PCB Items by Thermal Destruction (Final rept. Oct 79-Apr 80)

AUTHOR Ackerman, D. G. ; Scinto, L. L. ; Bakshi, P. S. ; Delumyea, R. G. ; Johnson, R. J.

PERFORMING ORGANIZATION TRW, Inc., Redondo Beach, CA.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB81-182339 (NTIS); EPA-600/2-81-022 (EPA)
EPA-68-02-3174 (EPA Contract Number)

REPORT DATE Feb 81 319p

ABSTRACT The report is a resource and guidelines document to aid EPA Regional Offices in interpreting and applying polychlorinated biphenyl (PCB) regulations to the thermal destruction of PCBs. As background material, the report describes fundamental processes of combustion, thermal destruction systems, sampling and analysis methodology, and flame chemistry relative to PCB incineration. Administrative considerations, including public involvement, are discussed. Detailed guidelines on the evaluation of Annex I incinerators, high efficiency boilers, and the several stages of the approval process are presented and discussed.

TITLE Health Effects Assessment for Polychlorinated Biphenyls (PCBS) Environmental Protection Agency, Cincinnati, OH. Environmental Criteria and Assessment Office.

SPONSOR Syracuse Research Corp., NY.

REPORT NUMBER PB86-134152/XAB (NTIS); EPA/540/1-86/004 (EPA)

REPORT DATE Sep 84 66p

NOTE See also PB81-117798, PB86-134145 and PB86-134160. Prepared in cooperation with Syracuse Research Corp., NY.
Also available in set of 58 reports PC E99, PB86-134111.

ABSTRACT The document represents a brief, quantitatively oriented scientific summary of health effects data. It was developed by the Environmental Criteria and Assessment Office to assist the Office of Emergency and Remedial Response in establishing chemical-specific health-related goals of remedial actions. If applicable, chemical-specific subchronic and chronic toxicity interim acceptable intakes are determined for systemic toxicants, or q(sub 1)* values are determined for carcinogens for both oral and inhalation routes. A a(sub 1)* was determined for polychlorinated biphenyls based on oral exposure.

TITLE	Hexachlorobenzene in Selected Marine Samples: An Environmental Perspective
AUTHOR	Phelps, D. K. ; Pruell, R. J. ; Lake, J. L.
CORPORATE SOURCE	Environmental Research Lab., Narragansett, RI.
REPORT NUMBER	PB85-237113/XAB (NTIS); EPA/600/D-85/139 (EPA)
REPORT DATE	Jul 85 30p
NOTE	See also PB84-213099.

ABSTRACT

Hexachlorobenzene (HCB) was designated as a chemical of interest. A new sample of mussel homogenate was spiked with an authentic HCB standard. Recovery of the spike was 56%. Re-examination of previously analyzed GC chromatograms and archived samples revealed peaks that co-eluted with the authentic HCB standard. Levels of HCB were at least three to four orders of magnitude lower than PCBs; two orders of magnitude lower than pyrene; and one to two orders of magnitude lower than either phenanthrene or benzo(a)pyrene found in the same mussel samples. Gas chromatograms (EC detection) of seawater (dissolved and particulate phases) and sediments also reveal very low levels of HCB. Because GCMS results indicated that levels of HCB were below the level of detection, it was not possible to verify the presence of HCB using GCMS.

TITLE High Resolution PCB (Polychlorinated Biphenyls) Analysis

AUTHOR Safe, S. ; Mullin, M. ; Safe, L. ; Pochini, C. ; McCrindle, S.

CORPORATE SOURCE Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB83-246124 (NTIS); EPA-600/D-83-095 (EPA)

REPORT DATE Aug 83 17p

ABSTRACT The potential environmental and health impact of PCBs must account not only for the integrated quantitation of the PCBs mixtures but also the concentrations of the specific congeners which are potentially toxic. The authors confirm the feasibility of high resolution PCB analysis of commercial and environmental PCB mixtures. They anticipate using this approach to accurately measure the concentrations of the specific PCB isomers in environmental and biological samples and to determine the effects of PCB structures on the ecological dynamics of this complex group of chemicals.

TITLE High Sensitivity Fourier Transform NMR. Intermolecular Interactions between Environmental Toxic Substances and Biological Macromolecules (Rept. for 2 Oct 74-1 Oct 76)

AUTHOR Levy, George C.

PERFORMING ORGANIZATION Florida State Univ., Tallahassee. Dept. of Chemistry.

SPONSOR Health Effects Research Lab., Research Triangle Park, N.C.

REPORT NUMBER PB-274 011/6 (NTIS); EPA/600/1-77/045 (EPA)
EPA-803095 (EPA Contract Number)

REPORT DATE Sep 77 96p

ABSTRACT

This project explored the feasibility of developing new techniques for evaluation of the effects of environmental toxic materials on complex biopolymer systems using high sensitivity Fourier transform nuclear magnetic resonance (nmr) spectroscopy. Commercial instrumentation available in 1974-75 did not possess adequate sensitivity, and thus one goal of this project was to increase spectral sensitivity, especially for the 13C and other nuclides having low magnetogyric ratios. Initially, modifications to an existing Bruker HX-270 spectrometer provided moderate improvement in sensitivity for 13C and substantial sensitivity increase for 15N observation. During the second (last) year of this grant, a new instrument design was initiated. Several studies were begun to elucidate the nature of chlorophenol interactions in liquids, and when incorporated into lecithin bilayer membrane models. Variable frequency 13C spin lattice relaxation time measurements were used to probe cooperativity of molecular chain dynamics in some simple molecules and in two complex synthetic polymers. A new theoretical modification involving a non-exponential autocorrelation function and also allowing for multiple independent internal rotations, allowed effective analysis of a large experimental set.

TITLE

High-Resolution PCB (Polychlorinated biphenyls) Analysis: Synthesis and Chromatographic Properties of All 209 PCB Congeners (Journal article)

AUTHOR

Mullin, M. D. ; Pochini, C. M. ; McCrindle, S. ; Romkes, M. ; Safe, S. H.

PERFORMING ORGANIZATION

Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

SPONSOR

Guelph Univ. (Ontario). Dept. of Chemistry.; Texas A and M Univ., College Station. Dept. of Veterinary Physiology and Pharmacology.

REPORT NUMBER

PB84-213115 (NTIS); EPA-600/J-84-036 (EPA)

REPORT DATE

c1984 12p

NOTE

Prepared in cooperation with Guelph Univ. (Ontario). Dept. of Chemistry, and Texas A and M Univ., College Station. Dept. of Veterinary Physiology and Pharmacology.
Pub. in Environmental Science and Technology, v18 n6 p468-476 1984.

ABSTRACT

This paper reports the synthesis and spectroscopic properties of all the mono-, di-, tri-, tetra-, penta-, hexa- and heptachlorobiphenyls and completes the synthesis of all 209 polychlorinated biphenyls (PCBs). The retention times and molar response factors of the 209 PCBs were determined relative to a reference standard, octachloronaphthalene. The retention times for these compounds generally increased with increasing chlorine content, and it was apparent that within a series of isomers there was an increase in retention time with increasing meta and para and decreasing ortho substitution. By use of a 50-m narrow bore fused silica capillary column coated with SE-54, it was possible to separate 187 PCB congeners, and only 11 pairs of compounds were not fully resolved. With some additional analytical improvements, isomer-specific PCB analysis can be utilized to determine the composition of commercial PCBs and accurately follow the fate and distribution of these pollutants within the global ecosystem. (Copyright (c) American Chemical Society 1984.)

TITLE

Hydrocarbons in Sediments and Benthic Organisms from a Dredge Spoil Disposal Site in RI Sound (Final rept.)

AUTHOR

Boehm, Paul D. ; Quinn, James G.

PERFORMING ORGANIZATION

Rhode Island Univ., Kingston. Graduate School of Oceanography.

SPONSOR

Environmental Research Lab., Narragansett, R.I.

REPORT NUMBER

PB-276 732/5 (NTIS); EPA/600/3-77/092 (EPA)
EPA-R-803415 (EPA Contract Number)

REPORT DATE

Nov 77 49p

ABSTRACT

It is the purpose of this study to investigate the spatial distribution of hydrocarbons both in upper Rhode Island Sound surface sediments and in the commercially important shellfish from the area, the ocean quahog (Acartia islandica). In doing so, an attempt is made to distinguish the regular hydrocarbon geochemistry of Rhode Island Sound, defined by background hydrocarbon distributions and inputs from Narragansett Bay and adjacent coastal areas, from the input due to mobilization of hydrocarbons from the deposited dredge spoil during the five years since the disposal activity has ceased.

TITLE Hydrocarbons, Polychorinated Diphenyls, and DDE in Mussels and Oysters from the U.S. Coast - 1976-1978 - the Mussel Watch (Technical rept.)

AUTHOR Farrington, John W. ; Risebrough, Robert W. ; Parker, Patrick L. ; Davis, Alan C. ; de Lappe, Brock

PERFORMING ORGANIZATION Scripps Institution of Oceanography, La Jolla, CA.

SPONSOR Environmental Protection Agency, Washington, DC.; Andrew W. Mellon Foundation, NY.

REPORT DATE Oct 82 111p

NOTE Also pub. as Woods Hole Oceanographic Institution, MA. rept. no. WHOI-82-42. Prepared in cooperation with California Univ., Bodega Bay. Bodega Marine Lab., and Texas Univ. at Austin, Port Aransas. Marine Science Inst. Sponsored in part by Andrew W. Mellon Foundation, NY.

REPORT NUMBER PB83-133371 (NTIS); EPA-R-804215 (EPA Contract Number)

ABSTRACT Mytilus edulis, Mytilus californianus, Crassostrea virginica and Ostrea equestris were sampled at 90 to 100 stations around the United States coastline during each of three years - 1976, 1977, 1978. Data for concentrations of PCB, DDE, total hydrocarbons, gas chromatographically unresolved complex mixture hydrocarbons, and selected aromatic hydrocarbons are presented for most of the samples.

TITLE Identification and Analysis of Polychlorinated Biphenyls and Other Related Chemicals in Municipal Sewage Sludge Samples (Final rept. 6 Dec 76-5 Jun 77 on Task 4)

AUTHOR Erickson, Mitchell D. ; Pellizzari, Edo D.

PERFROMING ORGANIZATION Research Triangle Inst., Research Triangle Park, N.C.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-273 192/5 (NTIS); EPA/560/6-77/021 (EPA)
EPA-68-01-1978 (EPA Contract Number)

REPORT DATE Aug 77 164p

ABSTRACT Methods were developed for the extraction, clean-up and GC/MS analysis of polychlorinated biphenyls (PCBs) and related chemicals in municipal sludge samples. Each of the sludge samples received from nine major United States cities was processed to yield a neutral fraction and two acid fractions which were methylated with dimethylsulfate and diazomethane, respectively. Samples were cleaned up by silica gel column chromatography. A total of 35 chlorinated compounds were found in the full scan GC/MS analysis, including polychlorobiphenyls, polychloronaphthalenes, polychloroaniline, polychlorobenzene and DDE. Some chlorinated compounds remain unidentified.

TITLE Identification of Chlorinated Insecticides in Fish for the Missouri Basin Region

PERFORMING ORGANIZATION Federal Water Quality Administration, Cincinnati, Ohio. Advanced Waste Treatment Research Lab.

REPORT NUMBER PB-264 901/0

REPORT DATE 1 Dec 70 20p

ABSTRACT The Missouri Basin Region, FWQA requested assistance for the analysis of a number of fish samples taken from the Nishnabotna River in Missouri. Heptachlor, aldrin, heptachlor epoxide, gamma chlordane, dieldrin, and DDT and its metabolites DDE and DDD were identified in samples of muscle tissue and viscera from several species of fish taken from the Nishnabotna River. While dieldrin was the most abundant chlorinated insecticide in almost all of the samples, it did not appear at abnormally high levels, and usually occurred in amounts three to four times greater than the other insecticides.

TITLE	Identification of Hazardous Organic Chemicals in Fish from the Ashtabula River, Ohio, and Wabash River, Indiana (Journal article)
AUTHOR	Kuehl, Douglas W. ; Leonard, Edward N. ; Welch, Kenneth J. ; Veith, Gilman D.
PERFORMING ORGANIZATION	Environmental Research Lab.-Duluth, MN.
REPORT NUMBER	PB81-165342 (NTIS); EPA-600/J-80-220 (EPA)
REPORT DATE	1980 9p
NOTE	Pub. in Jnl. of Association of Official Analytical Chemists, v63 n6 p1238-1244 1980.
ABSTRACT	Composite fish samples from the Wabash River, Indiana, and the Ashtabula River, Ohio, were analyzed by conventional pesticide procedures for PCBs, DDTs, chlordane components, and hexachlorobenzene. Additional aliquots of each sample were processed by gel permeation chromatography and were analyzed with gas chromatography-mass spectrometry by using both electron impact and negative chemical ionization modes. These analyses resulted in the identification of a series of chlorinated alkanes, chlorinated alkenes, chlorinated alkylamines containing 2-5 carbons, and polychlorinated styrenes in the Ashtabula River sample, and a series of chlorinated norbornenes, pentachlorobenzyl alcohol, and pentachlorophenol in the Wabash River sample.

TITLE Identification of Organic Compounds in a Mutagenic Extract of a Surface Drinking Water by a Computerized Gas Chromatography/Mass Spectrometry System (GC/MS/COM) (Journal article)

AUTHOR Coleman, W. Emile ; Melton, Robert G. ; Kopfler, Frederick C. ; Barone, Karen A. ; Aurand, Theresa A.

PERFORMING ORGANIZATION Health Effects Research Lab., Cincinnati, OH.

REPORT NUMBER PB81-165870 (NTIS); EPA-600/J-80-238 (EPA)

REPORT DATE 1980 15p

NOTE Pub. in Environmental Science and Technology, p576-588 May 80.

ABSTRACT The organics in a Cincinnati, Ohio drinking water sample were concentrated by a reverse osmosis (RO) process. The diethyl ether soluble extract of the RO concentrate which proved to be mutagenic in studies using the Ames test, was partitioned into acid and base/neutral fractions. The unpartitioned ethyl ether concentrate, an acid and methylated acid fraction, the unpartitioned base/neutral extract, and five base/neutral eluants from a silica gel microcolumn were analyzed for the presence of organics using a computerized gas chromatography/mass spectrometry system (GC/MS/COM) equipped with glass capillary columns. Analysis of individual fractions indicated a predominance of polychlorinated biphenyls (PCBs) and chlorinated aromatics in the second base/neutral partition and many polynuclear aromatics (PNA) in the fourth base/neutral partition. Approximately 460 compounds were identified in this tap water extract, including 41 PNAs, 15 PCBs, and a number of amines, amides, and other halogenated species.

TITLE Identification of Polychlorinated Biphenyls in the Presence of DDT-Type Compounds

CORPORATE SOURCE National Environmental Research Center, Cincinnati, Ohio. Analytical Quality Control Lab.

REPORT NUMBER PB-213 900/0 (NTIS); EPA-R2-72-004 (EPA)
EPA-68-01-0082 (EPA Contract Number)

REPORT DATE Oct 72 66p

NOTE Paper copy available from GPO $1.25 as EP1.23/2:72-004.

ABSTRACT Polychlorinated biphenyls (PCB's) interfere with gas chromatographic analyses of DDT and related compounds, necessitating a simple indipendent method for PCB determination. The purpose of the present study was to determine the applicability of low temperature (77K) luminescence methods to this problem. Basic studies included documentation of excitation/emission spectra of 6 pesticides (p, p' - and o,p'- DDE, DDD, and DDT), 7 PCB isomers, and 5 PCB mixtures (Aroclors). Although phosphorescence spectra of the DDD and DDT compounds are very similar, possible differences in lifetime and polarization measurements may aid in differentiation. Low temperature luminescence studies in various binary mixtures of Aroclor 1254 and p, p' -DDT indicate Aroclor 1254 may be identified and quantitated in the presence of DDT concentrations 100X greater.

TITLE Identification of Selected Federal Activities Directed to Chemicals of Near-Term Concern
(Final rept)

CORPORATE Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBERt PB-257 494/5 (NTIS); EPA/560/4-76/006 (EPA)

REPORT DATE Jul 76 36p

ABSTRACT This Report is intended to assist Federal agencies and other interested organizations obtain current information on the on-going activities of EPA directed to selected chemicals of near-term concern. In addition to identifying the principal EPA programs related to these chemicals, the Report also includes significant activities of other organizations when that information is available.

TITLE Impact of High Chemical Contaminant Concentrations on Terrestrial and Aquatic Ecosystems: A State-of-the-Art Review (Final rept. Sep 82-Sep 83)

AUTHOR Thibodeaux, L. J. ; Wolf, D. C. ; Davis, M.

PERFORMING ORGANIZATION Arkansas Univ., Fayetteville.

SPONSOR Environmental Research Lab., Athens, GA.

REPORT NUMBER PB84-220292 (NTIS); EPA-600/3-84-075 (EPA)
EPA-R-810480 (EPA Contract Number)

REPORT DATE Jul 84 120p

ABSTRACT The state-of-the-art of available methods for predicting the effects of high chemical concentrations on the properties, processes, functions, cycles, and responses of terrestrial and aquatic ecosystems was reviewed. Environmental problems associated with high chemical concentrations can occur in soil and water at landfills; landfarms; spill sites; and sites where chemicals were produced, used, stored, or discarded. Considerable information is available on effects of trace chemical contaminants, such as pesticides, polychlorinated biphenyls, chlorinated hydrocarbons, and metal ions, in the respective ecosystems. Predictive techniques are becoming available to describe transport and transformation of such contaminants and, thus, their fate and distribution in certain components of the environment. Present predictive methods and models that trace transport and transformation of chemical species are based on 'natural' soil and water properties such as density, porosity, infiltration, permeability, viscosity, hydrophobicity, and diffusivity.

TITLE Induction of Adenofibrosis and Hepatomas of the Liver in BALB/cJ Mice by Polychlorinated Biphenyls (Aroclor 1254) (Journal Article)

AUTHOR Kimbrough, Renate D. ; Linder, Ralph E.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Chamblee Toxicology Lab.

REPORT DATE 18 Apr 74 6p

NOTE Pub. in Jnl. of the National Cancer Inst., v53 n2 p547-772, Aug 74. Included in the report, Journal Articles on Toxicology. Group 16, PB-280 830. (Order as PB-280 830 from NTIS).

ABSTRACT Two groups of 50 BALB/cj inbred male mice were fed 300 ppm of a polychlorinated biphenyl, Aroclor 1254, in the diet for 11 and 6 months, respectively. The 6 months' feeding was followed by 5 months' recovery. Two additional groups of 50 mice each were fed plain chow. All 22 surviving mice fed Aroclor 1254 for 11 months had greatly enlarged livers representing 25% of their body weight, whereas those fed the experimental diet for 6 months only had slightly, but significantly, enlarged livers. Adenofibrosis was observed in all 22 livers of mice fed Aroclor 1254 for 11 months but not in the other groups. Of the 22 mice fed 300 ppm Aroclor 1254 for 11 months, 9 had 10 hepatomas measuring 0.1-1.5 cm in diameter. One of 24 surviving mice fed Aroclor 1254 for only 6 months, followed by a control diet for 5 months, had a hepatoma 0.3 cm in diameter. No controls had hepatomas.

TITLE Industry Views on the Use of Polychlorinated Biphenyls in Transformers and Capacitors (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-255 899/7 (NTIS); EPA/560/4-76/003 (EPA)

REPORT DATE Jun 76 41p

ABSTRACT Statements presented by representative manufacturers and users of PCB's and PCB containing products at meetings with the EPA Administrator have been compiled. Industry outlines its plans for discontinuing the use of PCB's, but presents summarizations of the problems with the phasing out of capacitor and transformer manufacture. The report represents a consultative step in meeting the EPA goal of banning the use of PCB's in all new products.

TITLE Interactive Effects of Aromatic Hydrocarbons, Their Derivatives, and Heavy Metals in Marine Fish

AUTHOR Gruger, Jr., Edward H. ; Hawkes, Joyce W. ; Malins, Donald C.

PERFORMING ORGANIZATION National Marine Fisheries Service, Seattle, WA. Northwest and Alaska Fisheries Center.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Research and Development.

REPORT NUMBER PB 82-119561 (NTIS); EPA-600/7-81-128 (EPA)

REPORT DATE Jul 81 121p

ABSTRACT Marine organisms living in environments containing toxic chemicals are often exposed simultaneously to many different classes of compounds, which collectively pose a different threat of toxicological effects than is posed separately by the individual compounds. The present research was directed toward elucidating the effect of xenobiotics which alter the metabolism and toxicity of aromatic hydrocarbons by marine fish (salmon and flounder), as evinced through biochemical changes and altered cellular morphology. The xenobiotics used included petroleum aromatic hydrocarbons, chlorinated biphenyls, p-cresol, cadmium and lead.

TITLE Interim Guidelines for the Disposal/Destruction of PCBs and PCB Items by Non-Thermal Methods (Rept. for Sep 80-Jul 81)

AUTHOR Sworzyn, E. M. ; Ackerman, D. G.

PERFORMING ORGANIZATION TRW, Inc., Redondo Beach, CA.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-217498 (NTIS); EPA-60/2-82-069 (EPA)
EPA-68-02-3174 (EPA Contract Number)

REPORT DATE Apr 82 177p

ABSTRACT The report is an interim resource and guideline document to help EPA regional offices implement the polychlorinated biphenyl (PCB) regulations (40 CFR 761) for using non-thermal methods of destroying/disposing of PCBs. The report describes and evaluates various alternative chemical, physical, and biological PCB removal and/or destruction technologies, including: carbon adsorption; catalytic dehydrochlorination; chlorinolysis; sodium-based dechlorination; photolytic and microwave plasma destruction; catalyzed wet-air oxidation; and activated sludge, trickling filter, and other bacterial methods. The alternative technologies were evaluated using technical, regulatory, environmental impact, economic, and energy criteria. Because the technologies investigated are in various stages of development (only sodium-based dechlorination is available commercially), data deficiencies exist and good engineering judgment was used to supplement available quantitative information. Of the technologies evaluated, many show potential for >90% PCB destruction with minimum environmental impact and low-to-moderate economic cost. These technologies are: catalytic dehydrochlorination, sodium-based dechlorination, and photolytic and microwave plasma processes.

TITLE International Study of 'Artemia' VIII. Comparison of the Chlorinated Hydrocarbons and Heavy Metals in Five Different Strains of Newly Hatched 'Artemia' and a Laboratory-Reared Marine Fish (Book chapter)

AUTHOR Olney, Charles E. ; Schauer, Paul S. ; McLean, Scott ; Lu, You ; Simpson, Kenneth L.

PERFORMING ORGANIZATION Rhode Island Univ., Kingston. Dept. of Food Science and Technology.

SPONSOR Environmental Research Lab., Narragansett, RI.

REPORT NUMBER PB82-180472 (NTIS); EPA-600/D-82-219 (EPA)
EPA-R-803818 (EPA Contract Number)

REPORT DATE 1980 12p

NOTE Pub. in The Brine Shrimp 'Artemia'. 1980. Volume 3. Ecology, Culturing, Use in Aquaculture (Universa Press, Wetteren, Belgium), p343-352.

ABSTRACT Newly hatched nauplii of Artemia from Brazil, Australia, Italy, and the United States (Utah and San Pablo Bay, California) were analyzed for chlorinated hydrocarbons. The Brazil and Australia nauplii contained very low levels of PCB and chlorinated insecticides. Italian nauplii contained the highest levels of HCB, BHCs and DDTs, while San Pablo nauplii were highest in chlordanes, dieldrin and PCBs. With the exception of 188 ppb pp-DDT in Italy nauplii, none of the residues exceeded 100 ppb on a wet weight basis. Attempts to correlate nauplii residue levels with the survival of laboratory-reared marine fish and crabs disclose no obvious component(s) which could totally account for the poorer performance of the Utah and San Pablo strains. Twelve metals, including copper, lead, and cadmium, were measured by atomic absorption and neutron activation analysis.

TITLE Intrauterine Exposure of Human Newborns to PCBs (Polychlorinated Biphenyls): Measures of Exposure

AUTHOR Jacobson, S. W. ; Jacobson, J. L. ; Schwartz, P. M. ; Feng, G. G.

PERFORMING ORGANIZATION Michigan Univ., Ann Arbor. School of Public Health.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-210061; EPA-600/D-84-162
EPA-R-808520 (EPA Contract Number)

REPORT DATE Jun 84 33p

ABSTRACT The purpose of the present paper is two-fold: (1) to summarize what is known about the pre- and postnatal effects of an especially ubiquitous chemical compound, polychlorinated biphenyls (PCBs); and (2) to examine empirically some of the linkages proposed in an analytic model of PCB exposure in human infants. The linkages of interest are those between the source of contamination and the exposure of mother and infant. The present data are consistent with the notion that PCBs move through the environment and the human body into systems which may potentially threaten the infant both before and after birth. At this time it is not clear which of these exposures--prenatal (intrauterine) or postnatal (via breast milk)--has the greater impact on infant development. While the absolute quantity of PCB residues is substantially lower in cord serum than in breast milk, the fetal organism is particularly vulnerable during the prenatal period. One factor that has been overlooked in this debate is the size of the fetus. When PCB exposure is calculated on the basis of body weight, the infant's prenatal exposure is substantial.

TITLE Intrauterine Exposure of Humans to PCBs (Polychlorinated Biphenyls): Newborn Effects

AUTHOR Fein, G. ; Jacobson, J. L. ; Jacobson, S. W. ; Schwarz, P.

PERFORMING ORGANIZATION Michigan Univ., Ann Arbor. School of Public Health.

SPONSOR Wayne State Univ., Detroit, MI. Dept. of Psychology.; Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-188887 (NTIS); EPA-600/3-84-060 (EPA)
EPA-R-808520 (EPA Contract Number)

REPORT DATE 84 89p

NOTE Prepared in coooperation with Wayne State Univ., Detroit, MI. Dept. of Psychology.

ABSTRACT

The effect of low-level chronic exposure to polychlorinated biphenyls (PCBs) from consumption of Lake Michigan fish was assessed in pregnant women and their newborn offspring. Low levels of PCBs remain in the human body for some time, and caused, in this sample, decreases in birth weight, head circumference, and gestational age of the newborn. PCBs appeared to be transmitted to the infants prior to birth through the maternal serum, and after birth through breast milk. Behavioral deficiencies were observed in the infants exposed to PCBs both in autonomic immaturity and depressed responsiveness.

TITLE

Investigation of Chlorinated and Nonchlorinated Compounds in the Lower Fox River Watershed (Final rept.)

AUTHOR

Ball, Joseph ; Priznar, Francis ; Peterman, Paul

PERFORMING ORGANIZATION

Wisconsin Dept. of Natural Resources, Madison. Water Quality Evaluation Section.

SPONSOR

Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

REPORT NUMBER

PB-292 818/2 (NTIS); EPA/905/3-78/004 (EPA)
EPA-68-01-4186 (EPA Contract Number)

REPORT DATE

Sep 78 235p

ABSTRACT

This report concerns the existence, source and fate of chlorinated and non-chlorinated organic compounds in the Lower Fox River of Wisconsin. Raw and treated wastewaters, surface water, seston, snowmelt, sediment, fish and clams were sampled. A total of 105 compounds were identified and an additional 20 compounds were characterized by GC/MS. Twenty identified compounds are on the U.S. EPA Consent Decree Priority Pollutant List. The study shows PCBs and some other chloro-organics in effluents are reduced by efficient suspended solids removal. It is possible, but not proven, that some chloro-organics are formed by process or effluent chlorination. Clams were found to rapidly bioaccumulate PCBs. Fish fillet samples contained PCB concentrations up to 90 mg/kg. Sediments throughout most of the river were found to be contaminated with PCBs. An extensive bibliography is included.

TITLE Investigation of Measuring Method of PCB in Gas Phase (Kiso PCB Sokuteiho no Kento)

AUTHOR Abe, T. ; Sone, M.

CORPORATE SOURCE Environmental Protection Agency, Research Triangle Park, N.C. Translation Services Section.

REPORT NUMBER PB-258 667-T (NTIS); EPA-TR-76-542 (EPA)

REPORT DATE Apr 74 10p

NOTE Trans. of Miyagi-Ken Kogai Gijutsu Senta Hokoku (Japan) n2 p24-27 Apr 74.

ABSTRACT Polychlorobenzene (PCB) contents in the exhausted gas from garbage combustion and in the air were measured. For the former, the exhaust gas was sucked from the duct directly by a pump and passed through two mist traps which were maintained at 0 and -78 C and through an n-hexane trap at -78 C. The PCB in the three traps was pooled and n-hexane was separated from water by a fractionating funnel and then concentrated by a KD concentrator, purified by fluorigel column, and finally analyzed by gas chromatography quantitatively and qualitatively. Air was sucked by high volume air sampler for 24 hr and dust collected on filter paper was extracted into 100 ml of n-hexane for 4 or 5 hr. This was concentrated by KD concentrator to 5 ml and analyzed by gas chromatography after purification by fluorigel column.

TITLE Iowa Department of Environmental Quality 1976-1977 (Annual rept)

PERFORMING ORGANIZATION Iowa Dept. of Environmental Quality, Des Moines.

REPORT DATE 1978 29p

NOTE See also PB-266 949.

ABSTRACT The Iowa Department of Environmental Quality's Annual Report for fiscal year 1976-77 is organized into three major program areas: Air Quality, Land Quality and Water Quality. Activities of each area are reviewed along with goals for the future. The Department's organizational structure and financial summary complete the report.

TITLE	Kinetics of the Reactions of Naphthalene and Biphenyl with OH Radicals and with 03 at 294 + or - 1 K (Journal article)
AUTHOR	Atkinson, R. ; Aschmann, S. M. ; Pitts, J. N.
PERFORMING ORGANIZATION	California Univ., Riverside. Statewide Air Pollution Research Center.
SPONSOR	Environmental Sciences Research Lab., Research Triangle Park, NC.
REPORT NUMBER	PB85-243921 (NTIS); EPA/600/J-84/325 (EPA)
REPORT DATE	c1984 5p
NOTE	Pub. in Environmental Science and Technology 18, n2 p110-113 1984.

ABSTRACT

Naphthalene and biphenyl are the simplest members of the polycyclic aromatic hydrocarbons and the polyphenyls, respectively. In addition, biphenyl is the parent compound of the chlorine and bromine substituted biphenyls. However, these bicyclic aromatics are of a sufficiently low volatility to make experimental measurements of their gas phase reactions and atmospheric lifetimes and fates difficult. In this work rate constants for the gas phase reactions of OH radicals and 03 with naphthalene and biphenyl have been determined under atmospheric conditions at 294 + or - 1 K. These data are discussed in terms of the environmental lifetimes for these aromatic hydrocarbons and available techniques for the study of the gas phase reactions of low volatility organics are discussed.

TITLE Laboratory Evaluation of High-Temperature Destruction of Polychlorinated Biphenyls and Related Compounds

AUTHOR Duvall, D. S. ; Rubey, W. A.

PERFORMING ORGANIZATION Dayton Univ., Ohio. Research Inst.

SPONSOR Municipal Environmental Research Lab., Cincinnati, Ohio.

REPORT NUMBER PB-279 139/0 (NTIS) EPA/600/2-77/228 (EPA)
EPA-R-803540 (EPA Contract Number)

REPORT DATE Dec 77 74p

ABSTRACT A specialized laboratory technique incorporating a two-stage quartz system was used for determining the thermal destruction properties of PCB's and related compounds. With this system, a small sample was first converted to the gas phase, then exposed to high-temperature destruction conditions. Critical parameters of temperature and residence time were accurately measured. When PCB's were exposed for one second to a series of high-temperature air environments, it was found that initial decomposition occurred at approximately 640C; greater than 95% molecular destruction was obtained at 740C; and 99.995% molecular destruction was found at 1000C. Also, it was determined that PCB's (and certain related compounds) thermally decompose to low molecular weight products, as yet unidentified.

TITLE Lake Michigan Fish Consumption as a Source of Polychlorinated Biphenyls in Human Cord Serum, Maternal Serum, and Milk (Journal article)

AUTHOR Schwartz, P. M. ; Jacobson, S. W. ; Fein, G. ; Jacobson, J. L. ; Price, H. A.

PERFORMING ORGANIZATION Michigan Univ., Ann Arbor. School of Public Health.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-101534 (NTIS); EPA-600/J-83-041 (EPA)
EPA-R-808520 (EPA Contract Number)

REPORT DATE c1983 7p

NOTE Pub. in American Jnl. of Public Health, v73 n3 p293-296 1983. Not available NTIS.

ABSTRACT Reported consumption of Lake Michigan sport fish was examined in relation to the levels of polychlorinated biphenyls (PCBs) in biological samples provided by a sample of maternity patients. Fish consumption was correlated with PCB levels in maternal serum and milk but not in cord serum. PCB levels in serum increased with age, but were unrelated to social class, parity, or weight. Women who breast fed consumed as much fish as women who did not and their maternal and cord sera PCB levels were similar.

TITLE Levels of Polychlorinated Biphenyls in Adipose Tissue of the General Population of the Nation

AUTHOR Yobs, Anne R.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga.

REPORT NUMBER PB-276-330/8 (NTIS)

REPORT DATE Apr 72 3p

NOTE Pub. in Environmental Health Perspectives, n1 p79-81, Apr 72. Included in the report, Journal Articles on Pesticide Content in Food and Man, PB-276 326. Order as PB-276 326 from NTIS.

ABSTRACT Polychlorinated biphenyls have been found in measurable amounts in 31.1% of 637 samples of human adipose tissue collected from the general population as a part of the Human Monitoring Survey. Sample collection involved 18 States and the District of Columbia. Positive samples were obtained from every State sampled.

TITLE Light Microscopy and Ultrastructure of Liver of Rats Fed Polychlorinated Biphenyls

AUTHOR Kimbrough, Renate D. ; Linder, Ralph E. ; Gaines, Thomas B.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.

REPORT NUMBER PB-277 597/1 (NTIS)

REPORT DATE 1972 1p

NOTE Pub. in Toxicology and Applied Pharmacology 22(2) p315-316, Jun 72. Included in the report, Journal Articles on Toxicology. Group 1, PB-277 586. Order as PB-277 586 from NTIS.

ABSTRACT Polychlorinated biphenyls (PCB) are widely distributed in the environment. Two PCB were fed to groups of 10 male and 10 female weanling Sherman strain rats in their diet at levels of 0, 20, 100, and 500 ppm Aroclor 1254 and 0, 20, 100, 500, and 1000 ppm Aroclor 1260 for 8 mo. The livers of all rats exposed to the Aroclors weighed more than those of the controls. This difference was significant for all exposed male rats ($p < 0.025$) and for the females fed 500 ppm of either compound.

TITLE Management of Bottom Sediments Containing Toxic Substances, Proceedings of the U.S.-Japan Experts' Meeting (5th) Held at New Orleans, Louisiana on November 1979

AUTHOR Peterson, Spencer A. ; Randolph, Karen K.

PERFORMING ORGANIZATION National Heart, Lung, and Blood Inst., Bethesda, MD.

REPORT NUMBER PB81-173825 (NTIS); EPA-600/9-80-044 (EPA)

REPORT DATE Sep 80 277p

NOTE See also report dated Jul 77, PB-272 684.

ABSTRACT This report is the compilation of papers presented at the Fifth United States-Japan Experts Meeting on the Management of Bottom Sediments Containing Toxic Substances, one of the 10 identified areas.

TITLE Manual of Analytical Quality Control for Pesticides and Related Compounds in Human and Environmental Samples

AUTHOR Sherma, Joseph

PERFORMING ORGANIZATION Lafayette Coll., Easton, PA. Dept. of Chemistry.

SPONSOR Environmental Protection Agency, Research Triangle Park, NC.

REPORT NUMBER PB81-222721; (NTIS); EPA-600/2-81-059 (EPA)
EPA-68-02-2474 (EPA Contract Number)

REPORT DATE Apr 81 468p

NOTE See also Jan 79, PB-298 711.

ABSTRACT This manual provides the pesticide chemist with a systematic protocol for the quality control of analytical procedures and the problems that arise in the analysis of human or environmental media. It also serves as a guide to the latest and most reliable methodology available for the analysis of pesticide residues in these and other sample matrices. The sections dealing with inter- and intra-laboratory quality control, the evaluation and standardization of materials used, and the operation of the gas chromatograph are intended to highlight and provide advice in dealing with many problems which constantly plague the pesticide analytical chemist. Many aspects of the problem areas involved in extraction and isolation techniques for pesticides in various types of samples are discussed. Techniques for confirming the presence or absence of pesticides in sample materials are treated at some length. This highly important area provides validation of data obtained by the more routine analytical procedures. The gas chromatograph, being the principal instrument currently used in pesticide analysis, often requires simple servicing or troubleshooting. A section addressing some of these problems is included. Last, but by no means least in importance, is a short dissertation of the value and need for systematic training programs for pesticide chemists.

TITLE Manual of Analytical Quality Control for Pesticides and Related Compounds in Human and Environmental Samples. A Compendium of Systematic Procedures Designed to Assist in the Prevention and Control of Analytical Problems

AUTHOR Sherma, Joseph ; Beroza, Morton

PERFORMING ORGANIZATION Lafayette Coll., Easton, PA. Dept. of Chemistry.

SPONSOR Association of Official Analytical Chemists, Washington, DC.;
Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.

REPORT NUMBER PB-298 711/3 (NTIS) EPA/600/1-79/008 (EPA)
EPA-68-02-2474 (EPA Contract Number)

REPORT DATE Jan 79 413p

NOTE Revision of report dated Feb 76, PB-261 019. Prepared in cooperation with Association of Official Analytical Chemists, Washington, DC.

ABSTRACT

This manual provides the pesticide chemist with a systematic protocol for the quality control of analytical procedures and the problems that arise in the analysis of human or environmental media. It also serves as a guide to the latest and most reliable methodology available for the analysis of pesticide residues in these and other sample matrices. The sections dealing with inter- and intra-laboratory quality control, the evaluation and standardization of materials used, and the operation of the gas chromatograph are intended to highlight and provide advice in dealing with many problems which constantly plague the pesticide analytical chemist. Many aspects of the problem areas involved in extraction and isolation techniques for pesticides in various types of samples are discussed. Techniques for confirming the presence or absence of pesticides in sample materials are treated at some length. This highly important area provides validation of data obtained by the more routine analytical procedures. The gas chromatograph, being the principal instrument currently used in pesticide analysis, often requires simple servicing or troubleshooting. A section addressing some of these problems is included. Last, but by no means least in importance, is a short dissertation of the value and need for systematic training programs for pesticide chemists.

TITLE Maximum Utilization of Water Resources in a Planned Community: Contributions of Refractory Compounds by a Developing Community (Final rept. Sep 73-Dec 76)

AUTHOR Fisher, F. M.

PERFORMING ORGANIZATION Rice Univ., Houston, TX. Dept. of Biology.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB81-112880 (NTIS); EPA-600/2-80-113 (EPA)
EPA-802433 (EPA Contract Number)

REPORT DATE Aug 80 82p

NOTE See also PB80-116205.

ABSTRACT

Water, soil and biotic components from a natural drainage system in the Woodlands, a developing community in Texas, were assayed for halogenated compounds. PCB's were highest during year one (about 350 ppb in soil and animal samples) and diminished to 1/10 of those values during the second and third years of study. The highest residue values were coincident with the period of development when cut and fill operations, roadbed construction, and service installation were being effected. Mirex and chlordane were found in soil, water, and organisms from the drainage system around the golf course. These were also observed compounds in mosquitofish collected from the same area. Both compounds entered lakes by storm water and/or washed in by returning irrigation water from the golf course. Organisms from a stream which received storm waters from the lakes contained less insecticide than the golf course sampling.

TITLE

Measurement of Fugitive Atmospheric Emissions of Polychlorinated Biphenyls from Hazardous Waste Landfills (Journal article)

AUTHOR

Lewis, R. G. ; Martin, B. E. ; Sgontz, D. L. ; Howes, J. E.

PERFORMING ORGANIZATION

Battelle Columbus Labs., OH.

SPONSOR

Environmental Monitoring Systems Lab., Research Triangle Park, NC.

REPORT NUMBER

PB86-136215 (NTIS); EPA/600/J-85/243 (EPA)
EPA-68-02-3745 (EPA Contract Number)

REPORT DATE

c1985 7p

NOTE

Pub. in Environmental Science and Technology, v19 n10 p986-991 Oct 85.
Not available from NTIS.

ABSTRACT

Four landfills known to contain large quantities of polychlorinated biphenyls (PCBs) were monitored for atmospheric emissions: Three of these were uncontrolled and contained large numbers of electrical capacitors, many of which were scattered on the surface and leaking PCB askarel fluids. The other is a state-of-the-art PCB waste landfill designed to exceed the requirements of the Toxic Substances Control Act of 1978 (ToSCA) for PCB disposal. High atmospheric PCB concentrations were measured at the uncontrolled sites, while air levels were at or near background at the ToSCA-designed landfill. PCBs were detected at low levels in gas vents at the latter site.

TITLE Measurement of PCB Emissions from Combustion Sources (Final rept. Dec 76-Dec 78)

AUTHOR Levins, P. L. ; Rechsteiner, C. E. ; Stauffer, J. L.

PERFORMING ORGANIZATION Little (Arthur D.), Inc., Cambridge, MA.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB-293 360/4 (NTIS); EPA/600/7-79/047 (EPA)
EPA-68-02-2150 (EPA Contract Number)

REPORT DATE Feb 79 90p

ABSTRACT The report describes a gas chromatographic/mass spectrometric (GC/MS) procedure that overcomes problems encountered when using GC procedures (previously used to determine polychlorinated biphenyls (PCBs) in solids and water) on emissions from combustion sources. The GC/MS procedure, which relies on selected mass scanning in restricted regions of the chromatograms, was developed because in the combustion process the distribution pattern of the individual PCBs changes, rendering invalid the pattern matching approach used with the gas chromatographic/electron capture detection (GC/ECD) method.

TITLE Measurement of Polycyclic Organic Materials and Other Hazardous Organic Compounds in Stack Gases - State of the Art (Interim rept. Oct 76-Jan 77)

AUTHOR Jones, Peter W. ; Wilkinson, JoAnn E. ; Strup, Paul E.

PERFORMING ORGANIZATION Battelle Columbus Labs., Ohio.

SPONSOR Environmental Sciences Research Lab., Research Triangle Park, N.C.

REPORT NUMBER PB-274 013/2 (NTIS); EPA/600/2-77/202 (EPA)
EPA-68-02-2547 (EPA Contract Number)

REPORT DATE Oct 77 71p

ABSTRACT This report documents and reviews state-of-the-art methods for the measurement of polycyclic organic matter (POM) and other hazardous organic materials which are present in industrial stack emissions. Measurement methods for many hazardous compounds, such as POM and nitrosamines, are presented and, where specific methods have not been previously reported, the sections dealing with recommended methods provide useful guidance. Individual chapters are devoted to analytical methodology and stationary source sampling methodology, although an effective measurement strategy demands input from each protocol. An attempt is made to present a unified approach to hazardous organic emission measurement so that future studies may benefit through more realistic intercomparisons and more precise and accurate measurements.

TITLE Menomonee River Pilot Watershed Study. Volume I. Summary and Recommendations
(Final rept. May 74-Dec 79)

AUTHOR Chesters, Gordon ; Konrad, John G. ; Simsiman, G. V.

PERFORMING ORGANIZATION Wisconsin Univ.-Madison. Water Resources Center.

SPONSOR Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

REPORT NUMBER PB81-209900 (NTIS); EPA-905/4-79-020-A (EPA) Dec 79 91p
EPA-R-005142 (EPA Contract Number)

REPORT DATE Dec. '79 91P

NOTE Prepared in cooperation with Wisconsin Dept. of Natural Resources, Madison, and Southeastern Wisconsin Regional Planning Commission, Waukesha.

ABSTRACT This project was in support of the U.S./Canada Great Lakes water quality agreement. The objectives are described under the reference--Pollution from Land Use Activities Reference Group (PLUARG). This work was done under Task C of the work plan. Several special study areas within the Menomonee River Watershed were sampled, analyzed, and evaluated. The water quality was measured, both surface and groundwater. Air deposition was measured to see how the quality of atmospheric inputs effected the water quality of the surface runoff.

TITLE Metals, Pesticides, and PCBs: Toxicities to Shrimp Singly and in Combination
(Final rept.)

AUTHOR Nimmo, DelWayne R. ; Bahner, Lowell H.

PERFORMING ORGANIZATION Environmental Research Lab., Gulf Breeze, Fla.

REPORT NUMBER PB-268 681/4 (NTIS); EPA/600/J-76-070 (EPA)

REPORT DATE 1976 12p

NOTE Pub. in Estuarine Processes; Uses, Stresses and Adaptation to the Estuary, v1, p523-531 1976.
Not available NTIS.

ABSTRACT The objective of the study was to assess potential deleterious effects of certain toxicants, singly and in combination, to penaeid shrimp. In nature, these shrimp are exposed to combinations of toxicants from industrial and municipal out-falls, from agricultural runoff or from dredge-and-fill operations. The combined toxicities of methoxychlor and cadmium to penaeid shrimp, Penaeus duorarum, were either independent or additive, and varied with the method(s) of bioassay. Conclusions were based on the results of 10-, 25- and 30-day bioassays conducted with the toxicants added singly or in combination to flowing water of constant salinity and temperature. Cadmium, but not methoxyclor, was accumulated by shrimp and methoxychlor appears to influence the processes of accumulation or loss of cadmium from tissues of shrimp.

TITLE Method Development for Determination of Polychlorinated Hydrocarbons in Municipal Sludge
(Final rept.)

AUTHOR Rodriquez, Charles F. ; McMahon, William A. ; Thomas, Richard E.

PERFORMING ORGANIZATION Southwest Research Inst., San Antonio, TX.

SPONSOR Environmental Monitoring and Support Lab., Cincinnati, OH.

REPORT NUMBER PB82-234071 (NTIS); EPA-600/4-82-035 (EPA)
EPA-68-03-2606 (EPA Contract Number)

REPORT DATE Apr 82 72p

ABSTRACT This report describes the work performed and the conclusions obtained from a study on the development of a method for analysis of municipal sewage sludge for chlorinated pesticides and biphenyls. The methodology developed consists of extraction of the polychlorinated compounds by liquid-liquid partitioning, cleanup by removal of some interferences on a liquid chromatographic column and by precipitation of sulfur with mercury,

concentration by evaporation of the extracting solvent, detection and quantification by electron capture gas chromatography, and confirmation of identity by gas chromatography/mass spectrometry. The methodology developed was determined to provide a sound basis for the determination of polychlorinated biphenyls and organochlorine pesticides in municipal sewage treatment facilities. The detection limit attained by application of the methodology to a number of different sludge and 3 to 15 microgram per gram dry sludge for the multicomponent polychlorinated formulations studied, chlordane, toxaphene, and Arochlor 1260.

TITLE Method Development for Determination of Polychlorinated Hydrocarbons in Municipal Sludge (Final rept.)

AUTHOR Rodriguez, Charles F. ; McMahon, William A. ; Thomas, Richard E.

PERFORMING ORGANIZATION Southwest Research Inst., San Antonio, TX.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB80-198401 (NTIS); EPA-600/2-80-029 (EPA)
EPA-68-03-2606 (EPA Contract Number)

REPORT DATE Mar 80 75p

ABSTRACT The method provides a procedure for analysis of pesticides and PCB's in municipal sludge. The method includes extraction by a centrifuge technique of the chlorinated compounds from the sludge matrix; clean-up of the extract to remove interferences by sulfur precipitation as mercury sulfide, and by gel permeation of florisil chromatography; quantitation of the chlorinated compounds by an electron capture detector with GC chromatrography; and confirmation of the chlorinated compounds by GC/MS/computer. The method provides confirmation of single component pesticides at 0/3 mg of pesticide per Kg of sludges. The recommended extracting solvent is 15% methylene chloride, 2% acetone and 83% hexane.

TITLE Methodology for Measurement of Polychlorinated Biphenyls in Ambient Air and Stationary Sources - A Review (Final rept.)

AUTHOR Margeson, John H.

CORPORATE SOURCE Environmental Monitoring and Support Lab., Research Triangle Park, N.C. Quality Assurance Branch.

REPORT NUMBER PB-269 350/5 (NTIS); EPA/600/4-77/021 (EPA)

REPORT DATE Apr 77 39p

ABSTRACT The state of development of methodology for measurement of polychlorinated biphenyls (PCBs) in ambient air and stationary sources was reviewed. The most promising method for ambient air measurements involves collection of PCBs on polyurethane foam, extraction with an organic solvent, removal of interferences by colum chromatography, and confirmation and analysis by electron-capture gas chromatography. Quantitation by perchlorination of PCBs to decachlorobipheny (DCB) is the most promising quantitation technique, but the procedure has not yet been perfected to the points are quantitatively converted to DCB. Perfection of this technique should allow for significant improvement in the quality of ambient PCB data being generated. Source and ambient methods differ mainly in sampling. Work on methodology for stationary sources is in the early stages of development and futher investigations are needed. The report contains 56 references.

TITLE Methods for Determining the Polychlorinated Biphenyl Emissions from Incineration and Capacitor and Transformer Filling Plants (Final rept.)

AUTHOR Haile, Clarence L. ; Baladi, Emile

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, Mo.

SPONSOR Environmental Monitoring and Support Lab., Research Triangle Park, N.C.

REPORT NUMBER PB-276 745/7 (NTIS); EPA/600/4-77/048 (EPA)
EPA-68-02-1780 (EPA Contract Number)

REPORT DATE Nov 77 94p

ABSTRACT Described are methods to measure the polychlorinated biphenyl (PCB) emissions from the stacks of municipal waste, industrial waste, and sewage sludge incinerators and from capacitor and transformer filling plants. The PCB emissions from the incineration plants are collected by impingement in water and adsorption on Florisil. The samples are extracted with hexane, concentrated through evaporation of the solvent, perchlorinated, and the polychlorinated biphenyl content measured as the decachlorinated isomer using a gas chromatograph equipped with a flame ionization detector. The PCB emissions from the capacitor and transformer filling plants are collected directly on Florisil, extracted with hexane and quantified against the appropriate Aroclor using a gas chromatograph. The methods were developed from laboratory studies and field tested at nine incineration plants and two transformer filling plants.

TITLE Methods of Analysis for By-Product PCBs-Literature Review and Preliminary Recommendations
(Interim rept. no. 1, Mar-Apr 82)

AUTHOR Erickson, Mitchell D. ; Stanley, John S.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB83-126573 (NTIIS); EPA-560/5-82-005 (EPA)
EPA-68-01-5915 (EPA Contract Number)

REPORT DATE 12 Oct 82 138p

NOTE See also PB83-127696.

ABSTRACT

A review of the literature on polychlorinated biphenyl (PCB) analysis and recommendations for methods to determine by-product PCBs in commercial products and other matrices is presented. This report was prepared to assist EPA in formulating a rule regulating by-product PCBs. The published literature on PCB analysis is critically reviewed. Several hundred references are cited in a bibliography. The review if subdivided into extraction, cleanup, determination, data reduction, confirmation, screening, quality assurance, and by-product analysis sections. The determination section includes TLC, HPLC, GC (PGC and CGC), GC detectors (ECD, FID, HECD, EIMS, and other MS) and nonchromatographic analytical methods (NMR, IR, electrochemistry, NAA, and RIA). Techniques applicable to analysis of commercial products, air, and water for by-product PCBs are discussed. The final section of this report presents a recommended overall primary analytical scheme.

TITLE

Methods/Materials Matrix of Ultimate Disposal Techniques for Spilled Hazardous Materials
(Final rept. 15 Feb 77-7 Jul 80)

AUTHOR

Mercer, B. W. ; Dawson, G. W. ; McNeese, J. A. ; Baker, E. G.

PERFORMING ORGANIZATION

Battelle Pacific Northwest Labs., Richland, WA.

PONSOR

Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER

PB85-116853/XAB (NTIS); EPA/600/2-84/170 (EPA)
EPA-68-01-2494 (EPA Contract Number)

REPORT DATE

Oct 84 130p

ABSTRACT

A study was undertaken to evaluate conventional and novel methods for the ultimate disposal of spilled or released hazardous substances. Disposal methods studied include incineration, pyrolysis, landfilling, fixation, biological treatment, and chemical treatment. Applications of and problems associated with each of these disposal methods are discussed. Special emphasis is given to spills of highly toxic and persistent hazardous materials. An annotated matrix was prepared to provide a full assessment of

conventional disposal options for each class of hazardous material and for mixtures thereof. The hazardous materials are grouped according to physical/chemical properties and placed in juxtaposition with the form (liquid, sludge) or composition of the spill residue containing the hazardous material (e.g., mixtures with water, grass, sand, debris, etc.). The disposal options are priority-ranked for each given set of conditions. The annotation describes each disposal option and evaluates the influence of spill-situation parameters on the disposal method with regard to effectiveness, cost, safety, availability of equipment and materials, and short and long-term hazards. Deficiencies in conventional disposal methods, such as secured landfills, are identified. An amended matrix, which supplements the matrix based solely on conventional methods, includes novel disposal methods that show strong potential for filling some of the gaps in existing disposal technology.

TITLE Microeconomic Impacts of the Proposed 'PCB Ban Regulations' (Final task rept.)

AUTHOR Westin, Robert ; Fourt, Louis ; Berkey, David ; Woodcock, Bruce

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Planning and Management.

REPORT NUMBER PB-281 881/3 (NTIS); EPA/560/6-77-035 (EPA)
EPA-68-01-4771 (EPA Contract Number)

REPORT DATE 16 May 78 147p

ABSTRACT This report summarizes the estimated economic impacts of the PCB Ban Regulations which are being proposed to implement Section 6(e) of the Toxic Substances Control Act.

ITLE — Microeconomic Impacts of the Proposed Marking and Disposal Regulations for PCBs. (Final Report)

PERFORMING ORGANIZATION — Versar, Inc.

SPONSOR — Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER — PB-267 833/2 (NTIS); EPA/560/6-77/013 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE — 26 Apr 77 184p

ABSTRACT — This report summarizes the estimated economic impacts of the marking and disposal regulations for PCBs which are being proposed in fulfillment of the requirements of Section 6(e) of the Toxic Substances Control Act. The scope of this analysis included estimates of the quantities of PCBs and equipment containing PCBs which will be affected by the proposed regulations, the present and required future availability, feasibility, and costs of the required PCB disposal facilities, the secondary costs of controlled disposal including storage, recordkeeping, and transportation, and the costs of satisfying the various marking requirements. The economic analysis included estimates of the additional costs of complying with these regulations as a function of year and economic sector. The analysis also considered the possible economic effects of these costs on price levels, investment requirements, and employment. Finally, the effects of compliance on energy requirements and on the availability of strategic materials were estimated.

TITLE — Micromethods for Toxic Residue Screening by Negative Chemical Ionization Mass Spectrometry
(Journal article)

AUTHOR — Kuehl, Douglas W. ; Whitaker, Michael J. ; Dougherty, Ralph C.

PERFORMING ORGANIZATION — Florida State Univ., Tallahassee. Dept. of Chemistry.

SPONSOR — Environmental Reseach Lab.-Duluth, MN.

REPORT NUMBER — PB81-126583 (NTIS); EPA-600/J-80-086 (EPA)
EPA-R-8063340010 (EPA Contract Number)

REPORT DATE — 1980 8p

NOTES Pub. in Analytical Chemistry 52, p935-940 1980.

ABSTRACT Methods were developed for the analysis of polychlorinated chemical residues found in milligram quantities of biological samples. Sample preparation by micro-continuous liquid-liquid extraction steam distillation or by micro gel-permeation chromatography gave sufficiently clean residue extracts for negative chemical ionization analysis. With these techniques, chemicals such as chlorophenols and chlorobiphenyls have been confirmed in human adipose samples as small as 12.5 mg. These methods make it possible to screen less than 1-g samples of biological substrates for contamination with persistant toxic substances at part-per-billion levels.

TITLE Mobile System for Extracting Spilled Hazardous Materials from Excavated Soils
(Final rept. Dec 76-Apr 82)

AUTHOR Scholz, R. ; Milanowski, J.

PERFORMING ORGANIZATION Rexnord, Inc., Milwaukee, WI.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB84-123637 (NTIS); EPA-600/2-83-100 (EPA)
EPA-68-03-2696 (EPA Contract Number)

REPORT DATE Oct 83 93p

ABSTRACT Laboratory tests were conducted with three separate pollutants (phenol, arsenic trioxide, and polychlorinated biphenyls (PCB's) and two soils of widely different characteristics (sand/gravel/silt/clay and organic loam) to evaluate techniques for cleansing soil contaminated with released or spilled hazardous materials. The tests show that scrubbing of excavated soil on site is an efficient approach for freeing soils of certain contaminants but that the effectiveness depends on the washing fluid (water + additives) and on the soil composition and particle size distribution. Based on the test results, a full-scale, field-use system was designed, engineered, fabricated, assembled, and briefly tested; the unit is now ready for field demonstrations.

TITLE Modification and Evaluation of a High-Volume Air Sampler for Pesticides and Semivolatile Industrial Organic Chemicals (Journal article)

AUTHOR Lewis, Robert G. ; Jackson, Merrill D.

CORPORATE SOURCE Health Effects Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-246828 (NTIS); EPA-600/J-81-355 (EPA)

REPORT DATE 9 Nov 81 5p

NOTE Pub. in Analytical Chemistry, v54 n3 p592-594 Mar 82.

ABSTRACT Previously we reported the development and evaluation of a high-volume air sampler for pesticides and other semivolatile industrial organic chemicals (1). This sampler has proved useful for monitoring airborne pesticides associated with agricultural applications (2) and polychlorinated biphenyl emissions from incineration and spill cleanup processes (3) Since our initial publication, the sampling system has been improved through redesign of the collection module for more efficient and versatile use. The new module accomodates a reusable sorbent cartridge which can be extracted intact for chemical analysis. Both polyurethane foam (PUF) and granular sorbents can be employed for sampling air at flow rates of 200-250 L/min. This correspondence describes the collection module and reports results of studies conducted to improve sampling efficiencies for more volatile compounds.

TITLE Molten Salt Destruction of HCB (Hexachlorobenzene) and Chlordane - Bench and Pilot Scale Tests (Final rept.)

AUTHOR Yosim, S. J. ; Kellogg, L. G. ; Sudar, S.

PERFORMING ORGANIZATION Rockwell International, Canoga Park, CA. Energy Systems Group.

SPONSOR Industrial Environmental Research Lab.-Cincinnati, OH.

REPORT NUMBER PB84-246354 (NTIS); EPA/600/2-84/148 (EPA)
EPA-68-03-3014 (EPA Contract Number)

REPORT DATE Sep 84 143p

ABSTRACT

A research test program to demonstrate the destruction of chlorinated materials by the Molten Salt Destruction (MSD) process was conducted. In this process, combustible material and air are continuously introduced beneath the surface of a sodium carbonate-containing melt at 900-1050C. Any acidic gases such as HCl produced from chlorinated organic compounds are neutralized and retained in the melt. The chlorinated materials tested were solid hexachlorobenzene (HCB) and liquid chlordane. The HCB was a simulant for PCBs and the chlordane was representative of liquid chlorinated industrial wastes. The overall objective of the test series was to provide molten salt process performance data and to challenge the molten salt process limits for adequate waste destruction. The program consisted of bench-scale and pilot-scale tests. Both destruction efficiencies (DE) and destruction and removal efficiencies (DRE) were determined. The federal standards for thermal process destruction of PCBs of 99.9999% destruction and 99.99% destruction for halogenated organics such as chlordane were met in both the bench-scale and pilot-scale tests.

TITLE

Monitoring for Polychlorinated Biphenyl Emissions from an Electrolytic Capacitor Disposal Project (Field project rept.)

AUTHOR

Rodes, Charles E. ; Jackson, Merrill D. ; Lewis, Robert G.

CORPORATE SOURCE

Environmental Monitoring and Support Lab., Research Triangle Park, N.C. Environmental Monitoring Branch.

REPORT NUMBER

PB-284 378/7 (NTIS); EPA/600/4-78-025 (EPA)

REPORT DATE

May 78 23p

NOTE

Prepared in cooperation with Health Effects Research Lab., Research Triangle Park, N.C. Environmental Toxicology Div.

ABSTRACT

Three different air sampling methods were used simultaneously to monitor for PCB emissions arising from a pilot disposal project involving electrolytic capacitors. Analytical results indicated that the primary polychlorinated biphenyl material was Aroclor 1242, and that airborne concentrations inside the building housing the grinders exceeded 5mg/cu m. The PCB air concentrations outside the building at a distance of 9 m were typically <1.0 microgram/cu m. Measurements made with one low-volume and two high-volume air samplers are compared.

TITLE Monitoring of Trace Constituents During PCB Recovery Dredging Operations: Duwamish Waterway

AUTHOR Blazevich, Joseph N. ; Gahler, Arnold R. ; Vasconcelos, George J. ; Rieck, Robert H. ; Pope, Stephen V. W.

CORPORATE SOURCE Environmental Protection Agency, Seattle, Wash. Surveillance and Analysis Div.

REPORT NUMBER PB-275 282/2 (NTIS); EPA/910/9-77/039 (EPA)

REPORT DATE Aug 77 156p

ABSTRACT This report describes the monitoring program conducted after a spill of 255 gallons of transformer fluid, Aroclor 1242, occurred in the Duwamish River in Seattle, Washington . A detailed evaluation is presented of data acquired prior to, during, and after recovery operations. An initial recovery effort conducted by EPA resulted in a 30 percent removal of the PCB. The Dept. of Defense, acting through the Corps of Engineers, removed the remaining Aroclor using a Pneuma dredge. This removal operation increased the total PCB recovered to approximately 92 percent. The release of pollutants from sediments during dredging could be only partially predicted by use of the elutriate test and evaluation of the interstitial water.

TITLE Morphological Changes in Livers of Rats Fed Polychlorinated Biphenyls, Light Microscopy and Ultrastructure

AUTHOR Kimbrough, Renate D. ; Linder, Ralph E. ; Gaines, Thomas B.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Office of Pesticides Programs.

REPORT NUMBER PB-279 729/8 (NTIS)

REPORT DATE 28 Apr 72 12p

NOTE Pub. in Arch Environ Health, v25 p354-364, Nov 72.
Included in the report, Journal Articles on Toxicology. Group 9, PB-279 718. Order as PB-279 718 from NTIS.

ABSTRACT Male and female Sherman strain rats were fed polychlorinated biphenyls Aroclor 1260 and Aroclor 1254 at 0, 20, 100, 500 and 1,000 ppm in their diet. Rats received the dietary levels for eight months. Light microscopic changes consisted of hypertrophy of the liver cells, inclusions in the cytoplasm, brown pigment in Kupffer cells, lipid accumulation, and, at the higher dietary levels, adenofibrosis. Ultrastructural changes of the livers of exposed animals consisted of an increase in smooth endoplasmic reticulum and atypical mitochondria. Lipid vacuoles were occasionally surrounded by concentric membranes. The epithelial component of adenofibrosis consisted of goblet cells and cells that resembled the epithelium which lines the bile ducts. In general, the effect of Aroclor 1254 on the liver was more pronounced than that of Aroclor 1260.

TITLE Mussel Watch: Intercomparison of Trace Level Constituent Determinations (Journal article)

AUTHOR Galloway, W. B. ; Bowen, V. T. ; Goldberg, E. D. ; Laseter, J. L. ; Martin, J. H.

CORPORATE SOURCE Environmental Research Lab., Narragansett, RI.

SPONSOR Woods Hole Oceanographic Institution, MA.; Scripps Institution of Oceanography, La Jolla, CA.; New Orleans Univ., LA.; Moss Landing Marine Labs., CA.

REPORT NUMBER PB84-213099 (NTIS); EPA-600/J-82-157 (EPA)

REPORT DATE c1983 18p

NOTE Also pub. as Woods Hole Oceanographic Institution, MA. Contrib. No. 5002. Prepared in cooperation with Scripps Institution of Oceanography, La Jolla, CA.; New Orleans Univ., LA. and Moss Landing Marine Lab., CA. Not available from NTIS.

ABSTRACT The U.S. National Mussel Watch Program initially used split-sample analyses for interlaboratory quality control purposes. These indicated the possibility of interlaboratory analytical discrepancies as well as problems in the split-sample technique itself. For the third year of the program, two mussel homogenates were produced to serve as intercomparison samples--one for metals and organics, the other for radionuclides. The results obtained using these homogenates are encouraging in that generally good agreement is seen among analyses done by several labs in diverse pollutant classes. (Copyright (c) Environmental Toxicology and Chemistry, 1983.)

TITLE National Conference on Polychlorinated Biphenyls (November 19-21, 1975, Chicago, Illinois)

AUTHOR Ayer, Franklin A.

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, N.C. Center for Technology Applications.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.; Department of Agriculture, Washington, D.C.; Department of Health, Education, and Welfare, Washington, D.C.; Department of the Interior, Washington, D.C.

REPORT NUMBER PB-253 248/9 (NTIS); EPA/560/6-75-004 (EPA)
EPA-68-01-2928 (EPA Contract Number)

REPORT DATE Mar 76 469p

NOTE Prepared in cooperation with Department of Agriculture, Washington, D.C., Department of Health, Education, and Welfare, Washington, D.C., and Department of the Interior, Washington, D.C.

ABSTRACT The objectives of the conference where to bring together the latest data and best available expertise to help clarify the problems associated with the manufacture, use and disposal of PCBs ... help assess the effectiveness of steps taken to reduce the problems associated with PCBs ... provide a platform for interested parties to present previous neglected data concerning PCBs ... help clarify the feasibility and complications of steps to reduce the problems associated with PCBs.

TITLE	National Dioxin Study Tier 4 - Combustion Sources: Initial Literature Review and Testing Options (Final rept.)
AUTHOR	Miles, A. J. ; Williams, J. A.
PERFORMING ORGANIZATION	Radian Corp., Research Triangle Park, NC.
SPONSOR	Environmental Protection Agency, Research Triangle Park, NC. Office of Air Quality Planning and Standards.
REPORT NUMBER	PB85-216166/XAB (NTIS); EPA/450/4-84/014B (EPA) EPA-68-02-3513 (EPA Contract Number)
REPORT DATE	Oct 84 221p
NOTE	See also PB85-172336.
ABSTRACT	The objective of Tier 4 of the National Dioxin Study is to determine if combustion sources emit significant amounts of dioxins to the atmosphere. The literature review was performed prior to the initiation of the Tier 4 dioxin emissions test program. The purpose of the literature review was to summarize the existing dioxin emissions data base for combustion sources and to develop a list of candidate source categories for the test program. The literature review presents a summary of the available dioxin emissions data and discusses factors affecting dioxin emissions from combustion sources. A preliminary ranked list of source categories recommended for the Tier 4 test program is presented, along with an overview of the recommended testing approach. A tabular summary of the dioxin emissions data base and a comprehensive reference list are included as appendices.

TITLE NATO-CCMS Pilot Study on Disposal of Hazardous Wastes. Project: Thermal Treatment. Project Leader: Federal Republic of Germany (Final rept)

CORPORATE SOURCE NATO Committee on the Challenges of Modern Society, Brussels (Belgium).

REPORT NUMBER PB82-114521 (NTIS); NATO/CCMS-118

REPORT DATE 23 Mar 81 183p

ABSTRACT The report focuses on the incineration of hazardous waste in the participating countries -- The situation in general; details of hazardous waste incineration, co-incineration of hazardous wastes with domestic refuse, hazardous waste as a fuel substitute in the cement manufacturing industry, incineration of selected wastes (PCB, mineral oil wastes), incineration of hazardous wastes at sea, research and development, and conclusions and recommendations of the study.

TITLE Net Atmospheric Inputs of PCBs to the Ice Cover on Lake Huron (Journal article)

AUTHOR Murphy, T. J. ; Schinsky, A. W.

PERFORMING ORGANIZATION De Paul Univ., Chicago, IL.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-245687 (NTIS); EPA-xxx/xx-83/244
EPA-R-805 325 (EPA Contract Number
Data missing

REPORT DATE 83 8p

NOTE Pub. in Jnl. of Great Lakes Research 9, n1 p92-96 1983.
Not available from NTIS.

ABSTRACT This report describes the first measurements of the net atmospheric deposition of PCBs to the ice cover of a body of water. The net deposition of PCBs includes the wet, dry, and vapor deposition, less any evaporation. The measurements were made on ice cores collected from the frozen surface of Lake Huron in the ice seasons of 1978 and 1979. Intrusions of lake water into the accumulated deposition layer of ice and snow were not encountered in these studies. Such intrusions, however, have complicated other attempts to use this method. Possible reasons for not encountering them in this study are discussed. (Copyright (c) International Assoc. Great Lakes Res. 1983.)

TITLE Organic Analyses in Water Quality Control Programs - Training Manual

AUTHOR Feldmann, Charles

CORPORATE SOURCE National Training and Operational Technology Center, Cincinnati, OH.

REPORT NUMBER PB81-124414 (NTIS); EPA-430/1-80-011 (EPA)

REPORT DATE Nov 80 209p

NOTE Supersedes PB-297 713.

ABSTRACT A lecture/laboratory manual dealing with the analysis of selected organic pollutants. Intended for use by those having little or no experience in the field, but having one year (or equivalent) of college organic chemistry, and having basic laboratory skills (volumetric glassware, titration assemblies, analytical and trip balances). Topics include dissolved oxygen, biochemical oxygen demand, ammonia, nitrates, nitrites, carbon analysis chemical oxygen demand, surfactants, oil and grease phenolics, gas chromatography, and polychlorinated biphenyls.

TITLE Organic Analyses in Water Quality Control Programs; Training Manual

AUTHOR Feldmann, Charles

CORPORATE SOURCE National Training and Operational Technology Center, Cincinnati, OH.

REPORT NUMBER PB-297 713/0 (NTIS); EPA/430/1-78/012 (EPA)

REPORT DATE Aug 78 212p

NOTE Supersedes PB-279 547. See also PB-297 714.

ABSTRACT The lecture/laboratory manual deals with the analysis of selected organic pollutants. It is intended for use by those having little or no experience in the field, but having one year (or equivalent) of college organic chemistry, and having basic laboratory skills such as volumetric glassware, titration assemblies, analytical and trip balances. Topics include dissolved oxygen, biochemical oxygen demand, ammonia, nitrates, carbon analysis, chemical oxygen demand, surfactants, oil and grease phenolics, gas chromatography, and polychlorinated biphenyls.

TITLE Organic Analyses in Water Quality Control Programs. Training Manual

CORPORATE SOURCE National Training and Operational Technology Center, Cincinnati, Ohio.

REPORT NUMBER PB-279 547/4 (NTIS); EPA/430/1-77/014 (EPA)

REPORT DATE Dec 77 193p

NOTE Supersedes PB-261 260, PB-261 318, PB-224 212 and PB-238 893.

ABSTRACT A lecture/laboratory manual deals with the analysis of selected organic pollutants. It is intended for use by those having little or no experience in the field, but having one year (or equivalent) of college organic chemistry, and having basic laboratory skills (volumetric glassware, titration assemblies, analytical and trip balances). Topics include dissolved oxygen, biochemical oxygen demand, ammonia, nitrates, nitrites, carbon analysis, chemical oxygen demand, surfactants, oil and grease phenolics, gas chromatography, and polychlorinated biphenyls.

TITLE	Organic Compounds Near Dumpsites in Niagara Falls, New York (Journal article)
AUTHOR	Elder, V. A. ; Proctor, B. L. ; Hites, R. A.
PERFORMING ORGANIZATION	Indiana Univ. at Bloomington. Dept. of Chemistry.
SPONSOR	Environmental Research Lab., Athens, GA.
REPORT NUMBER	PB84-116342 (NTIS); EPA-600/J-81-658 (EPA) EPA-R-806350 (EPA Contract Number)
REPORT DATE	c1981 10p
NOTE	Pub. in Biomedical Mass Spectrometry, v8 n9 p409-415 1981.

ABSTRACT

Water and sediment samples were taken from sites adjacent to hazardous waste disposal areas in Niagara Falls, New York. The samples were analyzed by gas chromatography/mass spectrometry. The following compounds were identified: chlorobenzenes, chlorotoluenes, polycyclic aromatic hydrocarbon derivatives, cyclohexane derivatives, polychlorinated biphenyls, trichlorophenol and other phenols, benzotrifluorides, mirex and phenothiazine. A large number of benzyl derivatives and unusual fluorinated compounds were also found; they were probably waste byproducts of industrial chemical production. The hazardous waste disposal sites were major sources for most of the compounds. (Copyright (c) Heyden & Son Ltd, 1981).

TITLE Organic Contaminants
(Journal article)

AUTHOR Glass, G. E. ; Strachan, W. M. I. ; Willford, W. A. ; Armstrong, F. A. I. ; Kaiser, K. L. E.

CORPORATE SOURCE Environmental Research Lab.-Duluth, Minn.

REPORT NUMBER PB-271 769/2 (NTIS); EPA/600/J-77/042 (EPA)

REPORT DATE 1977 20p

NOTE Pub. in the Waters of Lake Huron and Lake Superior, v3 p417-502 1977.

ABSTRACT Organic pollutants may constitute the most widespread waste loadings into the waters of Lake Superior. There are essentially three categories of organic contaminants. The first grouping consists of those organic compounds that readily degrade biologically or chemically. The second category of organic contaminants is comprised of less readily degraded organic compounds which may be directly toxic to aquatic life and to consumers of aquatic life, which may be bioconcentrated to toxic levels, or which may be metabolized to a more toxic form and stored in higher organisms. The third category consists of the many organic compounds that can cause taste and odor problems in domestic water supplies or taint the flesh of food fishes. Identification of individual organic compounds is difficult in environmental samples, and currently the state of the art is developing. The analytical methodology employed for all studies was based on extraction of non-ionic compounds. The data presented in this document for specific contaminants are only a representative portion of the data available.

TITLE Organic Contaminants - Lake Huron

AUTHOR Glass, G. E. ; Strachan, W. M. I. ; Willford, W. A. ; Armstrong, F. A. I.; Kaiser, K. L. E.

CORPORATE SOURCE Environmental Research Lab.-Duluth, Minn.

REPORT NUMBER PB-277 149/1 (NTIS); EPA/600/J-77/063 (EPA)

REPORT DATE 1977 20p

NOTE Pub. in The Waters of Lake Huron and Lake Superior, v2 PtB, Lake Huron, Georgian Bay, and the North Channel; ch6.4 p577-590, 667-670 1977. Report to the International Joint Commission-United States and Canada, Windsor (Ontario) by Upper Lakes Reference Group of Working Group C.

ABSTRACT The report discusses the following topics: Review of Potential Problems; Specific Contaminants--(Polychlorinated Biphenyls, DDT and its Metabolites, Aldrin plus Dieldrin, Hexachlorobenzene, Lindane, Chlordane, Methoxychlor, Polynuclear Aromatic Hydrocarbons, Chlorobenzene Compounds, Phenols, Phthalate Esters, Chloronorbornene, Octachlorostyrene, Methylbenzothiopene, Biphenyl, Endosulfan, Cyanide, Heptachlor Epoxide, and Other Organic Constituents); Discussion--Persistent Organic Contaminants, Taste and Odour Compounds.

TITLE Organochlorine Pesticide Residues in Human Adipose Tissue

AUTHOR Kutz, F. W. ; Yobs, A. R. ; Strassman, S. C.

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C.

REPORT DATE 1976 3p

NOTE Pub. in the Bulletin of the Society of Pharmacological and Environmental Pathologists, v4 n1 p17-19, Mar 76.
Included in the report, Journal Articles on Pesticide Content in Food and Man, PB-276 326. Order as PB-276 326 from NTIS.

ABSTRACT The article presents findings of selected organochlorine residues for surveys conducted on human adipose tissue during fiscal years 1970, 1971, and 1972. The residues selected for presentation in this paper were beta-benzene hexachloride, total DDT equivalent, dieldrin, heptachlor epoxide, oxychlordane, and polychlorinated biphenyls. All, except polychlorinated biphenyls, are representative of exposure to organochlorine insecticides; residues of polychlorinated biphenyls are indicative of exposure to that industrial contaminant.

TITLE Organochlorine Residues in Starlings, 1972

AUTHOR Nickerson, Paul R. ; Barbehenn, Kyle R.

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C. Criteria and Evaluation Div.

SPONSOR Fish and Wildlife Service, Washington, D.C. Div. of Technical Assistance.

REPORT DATE 1975 8p

NOTE Pub. in Pesticides Monitoring Jnl., v8 n4 p247-254 Mar 75. Prepared in cooperation with Fish and Wildlife Service, Washington, D.C. Div. of Technical Assistance.
Included in the report, Journal Articles on Pesticide Residues in Animals, PB-274 846. Order as PB-274 846 from NTIS.

ABSTRACT During the fall of 1972 starlings were collected from 130 sites in conjunction with the National Pesticide Monitoring Program. They were analyzed for DDT and its metabolites, dieldrin, heptachlor eposide, benzene hexachloride polychlorinated biphenyls and, for the first time in the series, oxychlordane and HCB. Mean DDT and dieldrin residue levels have declined significantly since 1967 and a regression analysis suggests that levels of DDT and its metabolites should fall below a mean of 0.1 ppm for the 1974 starling collection.

TITLE	Overview of Atmospheric Inputs and Losses from Films (Journal article)
AUTHOR	Eisenreich, S. J.
PERFORMING ORGANIZATION	Minnesota Univ., Minneapolis. Dept. of Civil and Mining Engineering.
SPONSOR	Environmental Research Lab.-Duluth, MN.
REPORT NUMBER	PB84-123884 (NTIS); EPA-600/J-82-405 (EPA) EPA-R-804573 (EPA Contract Number)
REPORT DATE	c1982 6p
NOTE	Pub. in Jnl. of Great Lakes Research, v8 n2 p241-242 1982.

ABSTRACT

The air-water interface in natural aquatic systems is often characterized by a surface film consisting of a thin layer of surface-active organic matter incorporating inorganic and organic dissolved and particulate matter. The surface film of both marine and freshwater systems concentrates nutrients, metals, and organic matter (natural and anthropogenic) above that found in the bulk surface water. Oftentimes, the particulate matter is enriched in metal and organic content above that found for particulate matter is enriched in metal and organic content above that found for particulate matter in the bulk water, but often similar to the atmospheric aerosol. The placement of the surface film at the air-water interface indicates that its composition is a result of in-lake scavenging processes and wet plus dry atmospheric deposition. The sources for and residence times of various contaminants in the surface film are discussed.

TITLE Overview of Contaminant Interactions with Surface Films, Zooplankton, and Fish
(Journal article)

AUTHOR McNaught, D. C.

PERFORMING ORGANIZATION Minnesota Univ., Minneapolis. Dept. of Ecology and Behavioral Biology.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-123827 (NTIS); EPA-600/J-82-407 (EPA)
EPA-R-804573 (EPA Contract Number)

REPORT DATE c1982 6p

NOTE Pub. in Jnl. of Great Lakes Research, v8 n2 p358-359 1982.

ABSTRACT Surface films contain organic matter, rich in lipids which serves to trap contaminants from the atmosphere. At specific times of the day, surface films may also entrap significant numbers of zooplankton, which presumably were attracted to near-surface food supplies and fishes in pursuit of their zooplankton prey. Thus the surfaces of the Great Lakes, as well as of small ponds and the oceans, are relatively rich in both living and decomposing organic matter. Such films are likely microhabitats where lipid-soluble contaminants move with relative ease from one compartment to another in the food web. The author hopes that continued study of dynamic aquatic systems, as outlined in this volume and begining with the atmosopheric input of contaminants like PCBs and terminating with lake trout bearing unacceptable levels, will lead to solutions to the preservice of our Great Lakes and their significant resources for future generations.

TITLE Partitioning of Selected Polychlorinated Biphenyls to Natural Sediments
(Journal article)

AUTHOR Steen, W. C. ; Paris, D. F. ; Baughman, G. L.

CORPORATE SOURCE Environmental Research Lab., Athens, GA.

REPORT NUMBER PB-289 654/6 (NTIS); EPA/600/J-78/054 (EPA)

REPORT DATE 1978 5p

NOTE Pub. in Water Research, v12(9), p655-657 1978.

ABSTRACT

The partitioning of two polychlorinated biphenyl mixtures (Aroclor 1016 and 1242) and two tetrachlorobiphenyl isomers (2,5,3',4', and 2,6,2'6' tetrachlorobiphenyl) between water and four natural sediments was evaluated in laboratory investigations. For both Aroclor mixtures, the extent of adsorption was comparable on all four natural sediments studied. For individual isomers, partitioning was comparable with that observed for the mixtures. Both particle size distribution and total organic carbon were important factors in determining the extent of partitioning for the two isomers: but in the case of the mixtures, there was no correlation with organic content.

TITLE Pathology of Two Species of Flatfish from Urban Estauries in Puget Sound (Final rept.)

AUTHOR McCain, Bruce B. ; Myers, Mark S. ; Varanasi, Usha ; Brown, Donald W. ; Rhodes, Linda D.

PERFORMING ORGANIZATION National Marine Fisheries Service, Seattle, WA. Northwest and Alaska Fisheries Center.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Research and Development.

REPORT NUMBER PB82-237785 (NTIS); EPA-600/7-82-001 (EPA)

REPORT DATE Feb 82 117p

ABSTRACT

This report describes the results of field and laboratory investigations conducted between October 1978and October 1980. The field studies yielded data on the prevalence and geographical distribution of diseased bottom-dwelling flatfish, specially English sole and starry flounder, in the Duwamish Waterway, Seattle, and other selected estuaries in Puget Sound. Levels of toxic metals, chlorinated hydrocarbons, and polynuclear aromatic hydrocarbons (AHs) in fish and bottom sediments from these estuaries were also determined. Concentrations of polychlorinated biphenyls (PCBs) in liver tissues of both English sole and starry flounder reflected the concentrations of these compounds in sediments from which the animals were captured.

TITLE PCB Concentrations in Striped Bass and Eggs (Final rept. 19 Apr-15 Jul 76)

AUTHOR Forns, Joseph M.

PERFORMING ORGANIZATION Westinghouse Ocean Research Lab., Annapolis, MD.

SPONSOR Environmental Protection Agency, Philadelphia, PA. Chesapeake Bay Program.

REPORT NUMBER PB-288 005/2 (NTIS); EPA/903/9-78/019 (EPA)

REPORT DATE Jul 76 12p

ABSTRACT The research project studied the accumulation of Polychlorinated biphenyls (PCB) in ppm of striped bass which spawned in the Chesapeake Bay. Samples were collected in the spawning areas of the Chesapeake Bay region including Nanticoke, Choptank, Elk, Potomac, Rappahannock, and James Rivers. Data includes the PCB Concentration in females, as well as eggs of striped bass.

TITLE PCB Disposal by Thermal Destruction (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Dallas, TX. Region VI.

REPORT NUMBER PB82-241860 (NTIS); EPA-906/9-82-003 (EPA)

REPORT DATE Jun 81 610p

ABSTRACT A report on the sampling, analysis, and consideration of risks and benefits associated with the incineration of polychlorinated biphenyls (PCBs) at two commercial facilities in Deer Park, Texas and El Dorado, Arkansas. Included are a summary, PCB incineration test reports, polychlorinated dibenzo-p-dioxin (PCDD) and polychlorinated dibenzofuran (PCDF) emission sampling reports, a PCDD and PCDF analytical chemistry report, air dispersion modeling results, an analysis of risks and benefits, and letters and conditions of approval.

TITLE	PCB Emissions from Stationary Sources: A Theoretical Study (Final rept.)
AUTHOR	Knieriem, Jr, Herman
PERFORMING ORGANIZATION	Monsanto Research Corp., Dayton, Ohio. Dayton Lab.
SPONSOR	Industrial Environmental Research Lab., Research Triangle Park, N.C.
REPORT NUMBER	PB-262 850/1 (NTIS); EPA/600/7-76/028 (EPA) EPA-68-02-1320 (EPA Contract Number)
REPORT DATE	Oct 76 43p

ABSTRACT

The report gives results of a theoretical assessment of polychlorinated biphenyl (PCB) formation and destruction in conventional fossil fuel fired sources. Results suggest a small but finite possibility that PCB isomers may be found in their emissions. The study was the result of concern caused by tentative identification of PCB isomers in ash and flyash from a utility steam generating boiler. The theoretical assessment concluded that: (1) PCB emissions are more likely from higher-chlorine content coal or residual oil combustion than from refined oil or natural gas; (2) PCB isomers with four or more chlorine atoms per molecule are more of an environmental hazard than those with three or less; (3) the probability of forming PCB isomers with four or more atoms of chlorine per molecule during combustion is restricted by the short residence times and low concentrations of chlorine available in many fossil fuels; (4) the amount of PCB emissions, if any, may be related to polynuclear aromatic hydrocarbon emissions; (5) based on the above, inefficient combustion control is more likely to produce PCB emissions than optimum conditions; and (6) the highest priority for field sampling and analysis of PCB from combustion sources should be for small- and medium-sized, hand- and underfeed-stoked coal furnaces.

TITLE	PCB Metabolism in Rats Following Prolonged Exposure to Aroclor 1242 and Aroclor 1016
AUTHOR	Burse, Virlyn W. ; Moseman, Robert F. ; Sovovool, G. Wayne ; Villanueva, Ellen C.
PERFORMING ORGANIZATION	Center for Disease Control, Atlanta, Ga.
SPONSOR	National Environmental Research Center, Research Triangle Park, N. C. Pesticides and Toxic Substances Effects Lab.; Coca Cola Export Corp., Atlanta, Ga.
REPORT DATE	1976 7p
NOTE	Pub. in Bulletin of Environmental Contamination and Toxicology, v15 n1 p122-128 1976. Prepared in cooperation with National Environmental Research Center, Research Triangle Park, N. C.f Pesticides and Toxic Substances Effects Lab., and Coca Cola Export Corp., Atlanta, Ga. Included in the report, Journal Articles on Toxicology, Group 15, PB-280 879. Order as PB-280 879 from NTIS.
ABSTRACT	Several mono- and dihydroxy metabolites of ditri, and tetrachlorobiphenyl have been identified in the urine of rats fed prolonged diets of Aroclor 1016 or Aroclor 1242. Combined gas chromatography-mass spectrometry was used for characterization of the metabolic products.

TITLE PCB Residue Levels in Human Adipose Tissue; a Statistical Evaluation by Racial Grouping (Final rept.)

AUTHOR Lucas, Robert M. ; Erickson, Mitchell D. ; Piserchia, Phil V. ; Williams, Stephen R.

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, NC.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB81-152902 (NTIS); EPA-560/13-79-015 (EPA)
EPA-68-01-5848 (EPA Contract Number)

REPORT DATE Nov 80 102p

ABSTRACT The proportion (or percent) of persons with greater than 3 ppm PCB and the proportion with detectable PCB residue are investigated with an emphasis on comparing differences between racial groups. The chemical analysis technique used to quantify the residue amounts is studied. The technique of using only one isomer (out of many) to quantitate aggregate PCB may result in bias that affect statistical significance levels of the racial differences. Hence, the apparent racial differences could not be confirmed nor denied.

TITLE PCB's in Agricultural and Urban Soil

AUTHOR Carey, A. E. ; Gowen, J. A.

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C.

REPORT DATE 1972 4p

NOTE Pub. in unidentified Jnl.
Included in the report, Journal Articles on Pesticide Residues in the Environment. Group 2, PB-276 312. Order as PB-276 312 from NTIS.

ABSTRACT

Polychlorinated biphenyls in soil have been monitored since 1972 as part of the National Soils Monitoring Program, originally established to measure pesticide residue levels in agricultural soils, raw agricultural commodities, and urban soils across the Nation. The PCB's are monitored as part of this program because of their chemical similarity to certain chlorinated pesticides. The PCB's have rarely been detected in agricultural soils of the United States. Only 0.1 percent of the soil samples collected in the National Soils Monitoring Program for 1972 contained detectable PCB levels. However, detectable levels of PCB's occur more frequently in urban soils. Of the 19 metropolitan areas sampled since 1971, 12 of the cities, or 63 percent showed detectable PCB levels. The most commonly encountered PCB was Aroclor 1254, which was identified in approximately 40 percent of the positive samples, while Aroclor 1260 was prevalent in about 20 percent of the positive samples.

TITLLE

PCBs (Polychlorinated Biphenyls) in Saginaw Bay: Development of Functional Indices to Estimate Inhibition of Ecosystem Fluxes

AUTHOR

NcNaught, D. C. ; Griesmer, D. ; Buzzard, M. ; Kennedy, M.

PERFORMING ORGANIZATION

Minnesota Univ., Minneapolis. Dept. of Ecology and Behavioral Biology.

SPONSOR

Environmental Research Lab.-Duluth, MN.

REPORT NUMBER

PB84-133008 (NTIS); EPA-600/3-84-008 (EPA)
EPA-R-804573 (EPA Contract Number)

REPORT DATE

Jan 84 106p

ABSTRACT

Saginaw Bay is among the most polluted bays in the Great Lakes. For many years the Large Lakes Research Station of the US-EPA has examined many aspects of this ecosystem, from phytoplankton community characteristics to contaminant levels in fishes. As a result, when it became desirable to determine the impact of an organochlorine contaminant like PCB, it was not necessary to study the ecosystem in detail. This study produced new information on the two most basic fluxes in any aquatic system, the flow of solar energy into the phytoplankton, and the flow of chemical energy into the zooplankton. The use of phytoplankton gross photosynthesis to estimate the inhibition by contaminants of the first flux mentioned was developed for marine communities.

TITLE

PCBs (Polychlorinated Biphenyls): Structure-Activity Relationships

AUTHOR

Safe, S. ; Parkinson, A. ; Robertson, L. ; Sawyer, T. ; Bandiera, S.

CORPORATE SOURCE Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB83-247486 (NTIS); EPA-600/D-83-096 (EPA)

REPORT DATE Aug 83 25p

ABSTRACT This report summarizes research on the chemical and toxicological characterization of PCB's. Results on the synthesis and characterization of all 209 PCB's and subsequent identification of individual PCB components in commercial mixtures and environmental samples are reported. This was essential for research relating the toxicity and biologic effects of commercial mixtures to chemical structure. The results of structure-activity research with the various congeners on several biological systems are also reported.

TITLE PCBs in the United States Industrial Use and Environmental Distribution (Final rept. on Task 1)

AUTHOR Durfee, Robert L. ; Contos, Gayaneh ; Whitmore, Frank C. ; Barden, James D. ; Hackman, III, E. E.

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-252 012/0 (NTIS); EPA/560/6-76/005 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE 25 Feb 76 488p

ABSTRACT This document presents the current state of knowledge about the production, usage, and distribution of polychlorinated biphenyls (PCBs) in the United States. The information presented is derived from detailed studies on the production and first tier user industries, the past and present generation and disposition of PCB-containing wastes, environmental transport and cumulative loads, potential alternatives to PCBs usage, inadvertent losses to and potential formation in the environment, and current regulatory authorities for PCBs control. These results indicated that, although PCBs content of industrial wastes can be reduced through various approaches (treatment, substitution, etc.), there exists a potentially severe future hazard in the form of large amounts of PCBs currently contained in land disposal sites. Further definition of this and other aspects of the PCBs problem, and determination of ways to minimize the hazard, are recommended.

TITLE PCBS Involvement in the Pulp and Paper Industry (Final rept. on Task 4)

AUTHOR Carr, Roderick A. ; Durfee, Robert L. ; McKay, Edward G.

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.

REPORT NUMBER PB-271 017/6 (NTIS); EPA/560/6-77/005 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE 25 Feb 77 110p

NOTE See also PB-252 012.

ABSTRACT The sources, distribution, and losses of PCBs in the U.S. pulp and paper industry are discussed in detail. The major source of PCBs to the industry is recycled carbonless copy paper manufactured from 1957 to 1971, but the amounts of PCBs from this source diminished rapidly after 1971. A model showing past and projected PCBs content in product and wastewaters from the industry is presented and discussed. Estimated costs (worst-case basis) for wastewater treatment to achieve one ppb PCBs in effluents from the industry are developed; results indicate a 3 to 5 percent product cost increase will result from such treatment.

TITLE PCBs Water Elimination/Reduction Technology and Associated Costs, Manufacturers of Electrical Capacitors and Transformers (Addendum to Final rept. (Task II))

AUTHOR Durfee, Robert

PERFORMING ORGANIZATION Versar, Inc., Springfield, Va.

SPONSOR Environmental Protection Agency, Washington, D.C. Office of Water Planning and Standards.

REPORT NUMBER PB-255 395/6 (NTIS); EPA/440/9-76/020 (EPA)
EPA-68-01-3229 (EPA Contract Number)

REPORT DATE 2 Jul 76 39p

NOTE Pub. in Bull. Environ. Contam. Toxicol., v19 p637-640, 1978.

ABSTRACT The brief report summarizes the concentrations of PCB's in oyster tissue (Crassostrea virginica) observed from April 1969 to June 1976 at three locations in the Escambria Bay estuary, following elimination of an accidental leak of Aroclor 1254 from an industrial site. Data showed that PCB's in oyster tissue decreased after the leak was eliminated, but a

steady-state concentration was reached. No Aroclor 1254 was detectable in water at stations sampled, but sediments were found to contain relatively low amounts (>0.31 ppm) in 1970 and 1971. The study demonstrates the persistence of PCB's long after the point-source discharges are eliminated.

TITLE Personal Exposure to Volatile Organics and Other Compounds Indoors and Outdoors - The TEAM (Total Exposure Assessment Methodology) Study

AUTHOR Wallace, Lance A. ; Pellizzari, Edo D. ; Hartwell, Tyler D. ; Sparacino, Charles ; Zelon, Harvey

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, NC.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Monitoring and Technical Support.

REPORT NUMBER PB83-231357 (NTIS); EPA-600/D-83-082 (EPA)
EPA-68-03-3679 (EPA Contract Number)

REPORT DATE Jul 83 35p

ABSTRACT The major objective of this study is to develop and field test a methodology for measuring individual human exposure to toxic substances. A secondary objective is to develop methods for estimating body burden with the use of biological measurements. All significant pathways of exposure are addressed. In Phase 1 of the study, sampling and analytical protocols were tested for volatile organic compounds, organochlorine pesticides, metals, and polyaromatic hydrocarbons. In Phase 2, exposure through air and drinking water and excretion rates through inhaled breath were measured for a statistically valid sample population. It was determined that personal air median concentrations ranged from 40 to 320% higher than outdoor fixed air concentrations. Correlations between personal and outdoor samples were poor. It was concluded that personal air, indoor air, or breath measurements are far superior to outdoor measurements for estimating exposure. The study is currently entering its third phase.

TITLE Pesticides and Polychlorinated Biphenyls in the Atchafalaya Basin, Louisiana

AUTHOR Hern, Stephen C. ; Lambou, Victor W. ; Tai, Han

CORPORATE SOURCE Environmental Monitoring and Support Lab., Las Vegas, NV.

REPORT NUMBER PB80-144835 (NTIS); EPA-600/4-79-061 (EPA)

REPORT DATE Sep 79 89p

ABSTRACT The collection and analysis of samples for pesticide and polychlorinated biphenyls (PCB's) were included in the Atchafalaya River Basin Water and Land Study. From 1974 to 1977, 743 samples were collected from 118 stations in the Atchafalaya Basin. Water, bottom sediment, and fish samples were analyzed for 9 organophosphorus compounds and 18 organochlorine compounds. No organophosphorus compounds were detected in any fish, water, or bottom sediment samples. Only a few organochlorine compounds, i.e., aldrin, dieldrin, PCB's, chlordane, and DDT and its derivatives, are present in bottom sediments of the Atchafalaya Basin. With the exception of PCB's none of the compounds was detected in water samples. Aldrin, dieldrin, PCB's, and DDT and its derivatives were found in fish samples. The pattern of pesticide distribution that emerges in the Atchafalaya Basin reflects the agricultural activity within or affecting the various hydrological units of the Basin.

TITLE Pesticides in People: Organochlorine Pesticide and Polychlorinated Biphenyl Residues in Biopsied Human Adipose Tissue-Texas 1969-72

AUTHOR Burns, James E.

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.

REPORT NUMBER PB-280 613/1 (NTIS)

REPORT DATE 1974 5p

NOTE Pub. in Pesticides Monitoring Jnl., v7 n3/4 p122-126, Mar 74.
Included in the report, Journal Articles on Toxicology, Group 13, PB-280 602. Order as PB-280 602 from NTIS.

ABSTRACT

Organochlorine pesticide residue levels were determined in 221 samples of human adipose tissue from elective surgery in 1969-72 in the lower Rio Grande Valley of Texas. Standard electron capture--gas-liquid chromatographic methods were used. The total DDT level was 23.18 ppm; the DDE level was 17.37, the highest yet reported for a general population. Dieldrin and beta BHC levels were also high: 0.35 and 1.29 ppm, respectively. No decrease in storage levels during the study period was detected. There was no difference due to sex, but Mexican-Americans had significantly higher residues of DDE, p,p't-DDT, and dieldrin than did Anglo-Americans. Polychlorinated biphenyls were detected in 15 samples in 1971 but none were detected in the other 3 years.

TITLE

Photochemical Confirmation of Mirex in the Presence of Polychlorinated Biphenyls
(Journal article)

AUTHOR

Lewis, Robert G. ; Hanisch, Robert C. ; MacLeod, Kathryn E. ; Sovocool, G. Wayne

CORPORATE SOURCE

Health Effects Research Lab., Research Triangle Park, N.C.

REPORT NUMBER

PB-268 138/5 (NTIS); EPA/600/J-76/065 (EPA)

REPORT DATE

7 May 76 6p

NOTE

Pub. in Jnl. of Agric. Food Chem., v24 n5 p1030-1035 1976.

ABSTRACT

A simple method for the determination of mirex in the presence of polychlorobiphenyls (PCB's) is reported. The procedure depends on diethylamine-assisted photodegradation of interfering PCB's prior to measurement of the mirex by electron capture gas chromatography. An inexpensive 275-W sunlamp (spectral output greater than 280 nm) may be used as the irradiation source. Reductive dechlorination of the PCB results apparently through primary photoexcitation of the biphenyl, followed by hydrogen abstraction from both the alkyl and amino groups of the amine. The method has been successfully applied to human tissue extracts for the determination of mirex in the presence of Aroclor 1260 and other commonly occurring chlorinated pesticides.

TITLE Physico-Chemical Model of Toxic Substances in the Great Lakes

AUTHOR Thomann, R. V. ; DiToro, D. M.

PERFORMING ORGANIZATION Manhattan Coll., Bronx, NY. Environmental Engineering and Science Program.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-170828 (NTIS); EPA-600/3-84-050 (EPA)
EPA-R-805916; EPA-R-807835 (EPA Contract Number)

REPORT DATE Mar 84 177p

ABSTRACT A physico-chemical model of the fate of toxic substances in the Great Lakes is constructed from mass balance principles and incorporates principal mechanisms of particulate sorption-desorption, sediment-water and atmosphere-water interactions, and chemical and biochemical decay. Calibration of the toxic model is through comparison to plutonium-239 data collected in the 1970s using a 23 year time variable calculation and indicates that in general, the sediments are interactive with the water column in the Great Lakes through resuspension and or horizontal transport. Fifty percent response times of 239Pu following a cessation of load extend beyond 10 years with sediment resuspension. The calibration model was applied to polychlorinated biphenyl (PCB) using a high and low estimate of contemporary external load and with and without volatilization. Calibration of the model to data on benzo(a)pyrene confirms that on a lake-wide scale the principal external source in the atmosphere and for the larger lakes such as Michigan the response time of the lake to external loads is about 6-10 years while for Lake Erie response time is about 2 years. Application of the model to cadmium in the lakes, using a solids dependent partition coefficient indicates that the lakes do not reach equilibrium over a 100 year period. Calculated high concentrations of cadmium in interstitial water (e.g., 10 microgram/l) indicate the importance of measuring interstitial cadmium concentrations.

TITLE Plans for Clinical and Epidemiologic Follow-up after Area-wide Chemical Contamination: Proceedings of an International Workshop Held at Washington, DC. on March 17-19, 1980 (Final rept)

PERFORMING ORGANIZATION National Research Council, Washington, DC.

SPONSOR Environmental Protection Agency, Washington, DC.; Centers for Disease Control, Atlanta, GA.

REPORT DATE 1982 431p

NOTE Sponsored in part by Centers for Disease Control, Atlanta, GA.

REPORT NUMBER PB83-144766 (NTIS)
EPA-68-02-3211 (EPA Contract Number)

ABSTRACT This workshop was an undertaking of the Committee on Response Strategies to Unusual Chemical Hazards and its counterpart Italian Committee. The Committee was established in 1979 as a result of the 1976 chemical explosion in Seveso, Italy to develop guidelines that might be used to implement a world-wide mechanism for guiding biomedical researchers at the scene of accidents similar to that at Seveso, and to evaluate newer health data from the Seveso accident and the design of future studies. The topic of the workshop, Plans for clinical and epidemiologic follow-up after area-wide chemical contamination, was approached from two points of view: first, by exploring a number of cases in which such widespread contamination occurred and which served as the basis for field studies; and second, by evaluating diseases and target organs that were identified as likely outcomes of chemical exposures. A synthesis of experiences and guiding principles for future investigations of similar exposures was provided by a panel of experts from the U.S. and Italy.

TITLE Polychlorinated Biphenyl Transport in Coastal Marine Foodwebs

AUTHOR O'Connor, J. M.

PERFORMING ORGANIZATION New York Univ. Medical Center, NY. Inst. of Environmental Medicine.

SPONSOR Environmental Research Lab., Gulf Breeze, FL.

REPORT NUMBER PB84 232610 (NTIS); EPA/600/3-84/083 (EPA)
EPA-R-808006 (EPA Contract Numbers)

REPORT DATE Aug 84 117p

ABSTRACT The extent to which polychlorinated biphenyls (PCBs) may be assimilated into fish from dietary sources was studied by providing known doses of PCBs (as Aroclor 1254 in food) to striped bass and analyzing cross-gut transport, tissue distribution and elimination. Assimilation and elimination data from single and multiple doses for whole fish were used to calculate rate-constants for PCB accumulation (k(a)) and elimination (k(e)) according to one-compartment pharmacokinetic models. The data from analysis of individual tissues were used to calculate ka and ke for individual tissue compartments. The major conclusions from the study are that PCBs in food represent a major source of PCB to fish (up to 80% of total body burdens). The PCBs obtained from food cause a rapid approach to steady state, but are eliminated slowly with a half-time of about 120 hr. More than 85% of the PCB ingested with food is assimilated into the tissues. The long-term model showed that PCB burdens in striped bass exposed to food containing different concentrations of PCB will decline slowly when levels in food decline, but increase rapidly (90% plateau reached in 9 doses) when levels in food increase. Preliminary verification studies support the pharmacokinetic model for PCB accumulation in striped bass with food as the major source.

TITLE Polychlorinated Biphenyls (Aroclor 1242): Effects of Uptake on E. coli Growth

AUTHOR Keil, Julian E. ; Graber, Charles D. ; Priester, Lamar E. ; Sandifer, Samuel H.

PERFORMING ORGAINZATION Medical Univ. of South Carolina, Charleston.

REPORT NUMBER PB-279 750/4 (NTIS)

REPORT DATE 1972 3p

NOTE Pub. in Environmental Health Perspectives, n1 p175-177, Apr 72.
Included in the report, Journal Articles on Toxicology. Group 8, PB-279 739. Order as PB-279 739 from NTIS.

ABSTRACT Experiments were performed to study the effects of PCBs in vitro on a facultative organism, Escherichia coli, common to human intestinal flora. This bacterium was also selected because it is the prime indicator of fecal contamination.

TITLE Polychlorinated Biphenyls and Other Organic Chemical Residues in Fish from Major United States Watersheds near the Great Lakes, 1978 (Journal article)

AUTHOR Veith, Gilman D. ; Kuehl, Douglas W. ; Leonard, Edward N. ; Welch, Kenneth ; Pratt, Glen

CORPORATE SOURCE Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB82-207903 (NTIS); EPA-600/J-81-549 (EPA)

REPORT DATE Jun 81 10p

NOTE Pub. in Pesticides Monitoring Jnl., v15 n1 p1-8 Jun 81.

ABSTRACT Twenty-six composite samples of fish were collected during 1978 from United States watersheds near the Great Lakes and analyzed for polychlorinated biphenyls (PCBs) and related organic chemicals. PCB mixtures resembling Aroclor 1254 were found in all samples, and mixtures resembling Aroclor 1242(or 1016) were found in 77 percent of the samples. Total PCB concentrations in the whole-fish composite samples ranged from 0.13 to 14.6 ppm; 65 percent of the samples contained 2 ppm PCBs. DDT and its metabolites were also found in all samples. Sigma DDT concentration was 1.66 ppm, and 81 percent of the samples contained 1.0 ppm Sigma DDT. Chlordane ranged from 0.001 to 2.57 ppm in 38 percent of the samples. Hexachlorobenzene was found in 65 percent of the samples, ranging from 0.005 to 0.447 ppm. Other chemicals identified by gas chromatography/mass spectrometry included petroleum hydrocarbons and chlorobenzenes, chlorostyrenes, chlorophenols, and chlorinated aliphatic compounds. Fish from the Ashtabula River (Ohio), Rocky River (Ohio), and Wabash River (Indiana) contained extremely complex residues of chlorinated and other organic chemicals.

TITLE Polychlorinated Biphenyls as Inducers of Hepatic Microsomal Enzymes: Effects of Di-Ortho Substitution (Journal article)

AUTHOR Parkinson, A. ; Robertson, L. W. ; Safe, L. ; Safe, S.

PERFORMING ORGANIZATION Guelph Univ. (Ontario).

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB84-123868 (NTIS); EPA-600/J-81-667 (EPA)
EPA-R-806928 (EPA Contract Number)

REPORT DATE c1981 16p

NOTE Pub. in Chemical Biology Interactions, n35 p1-12 1981.

ABSTRACT All of the 13 possible polychlorinated biphenyl (PCB) isomers and congeners substituted at both para positions, at least two meta positions (but not necessarily on the same ring) and at two ortho positions have been synthesized and tested as rat hepatic microsomal enzyme inducers. The effects of these compounds were evaluated by measuring microsomal benzo(a)pyrene (B(a)P) hydroxylase, 4-chlorobiphenyl (4-CBP) hydroxylase, 4-dimethylaminoantipyrine (DMAP) N-demethylase and NADPH-cytochrome c reductase activities, the cytochrome b5 content and the relative peak intensities and spectral shifts of the carbon monoxide (CO)- and ethylisocyanide (EIC)-difference spectra of ferrocytochrome P-450. The results were compared to the effects of administering phenobarbitone (PB), 3-methylcholanthrene (MC) and PB plus MC (coadministered).

TITLE Polychlorinated Biphenyls as Inducers of Hepatic Microsomal Enzymes: Structure-Activity Rules (Journal article)

AUTHOR Parkinson, A. ; Robertson, L. ; Safe, Lorna ; Safe, S.

PERFORMING ORGANIZATION Guelph Univ. (Ontario).

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB83-243741 (NTIS); EPA-600/J-80-419 (EPA)

REPORT DATE 80 18p

NOTE Pub. in Chemico-Biological Interactions 30, p271-285 1981.
Not available from NTIS.

REPORT NUMBER PB83-243741 (NTIS)
EPA-R-806928 (EPA Contract Number)

ABSTRACT A number of highly purified polychlorinated biphenyl (PCB) isomers and congeners were synthesized and administered to male Wistar rats at dosage levels of 30 and 150 micromol/kg. The effects of this in vivo treatment on the drug-metabolizing enzymes were determined by measuring the microsomal benzo(a)pyrene (B(a)P) hydroxylase, dimethylaminoantipyrine (DMAP) N-demethylase and NADPH-cytochrome c reductase enzyme activities, the cytochrome b sub 5 content and the relative peak intensities of spectral shifts of the reduced microsomal cytochrome P-450:CO and ethylisocyanide (EIC) binding difference spectra.

TITLE Polychlorinated Biphenyls in Human Adipose Tissue and Mother's Milk (Final rept.)

AUTHOR Lucas, R. M. ; Iannacchione, V. G. ; Melroy, D. K.

PERFORMING ORGANIZATION Research Triangle Inst., Research Triangle Park, NC.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB83-253179 (NTIS); EPA/560/5-83-011 (EPA)
EPA-68-01-5848 (EPA Contract Number)

REPORT DATE 11 Nov 82 62p

ABSTRACT Statistical Analysis of trends of polychlorinated biphenyl levels in human adipose tissue specimens collected in the EPA National Human Adipose Tissue Survey and in milk specimens collected in an EPA human mother's milk study.

TITLE Polychlorinated Biphenyls in Indoor Air (Journal article)

AUTHOR MacLeod, Kathryn E.

CORPORATE SOURCE Health Effects Research Lab., Research Triangle Park, NC. Environmental Toxicology Div.

REPORT NUMBER PB82-154931 (NTIS); EPA-600/J-81-511 (EPA)

REPORT DATE 4 May 81 5p

NOTE Pub. in Environmental Sciences and Technology 15(8), p926-928 Aug 81.

ABSTRACT Polychlorinated biphenyls (PCBs) have been recognized as environmental contaminants since the mid-1960s. Until recently, however, little work has been done on identifying levels of PCBs in the indoor air. This paper describes a method for the analysis of PCBs utilizing low-volume indoor air sampling. The method uses polyurethane foam as a collector and has a limit of detection of about 0.01 micrograms/cu m. This study shows that indoor air whether in commercial, industrial, or residential buildings, contains levels of PCBs at least 1 order of magnitude higher than outdoor levels. Defective fluorescent light ballasts are also shown to emit PCBs and to be an important source of indoor atmospheric contamination.

TITLE Polychlorinated Biphenyls in Precipitation in the Lake Michigan Basin (Final rept.)

AUTHOR Murphy, Thomas J. ; Rzeszutko, Charles P.

PERFORMING ORGANIZATION De Paul Univ., Chicago, IL.

SPONSOR Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

REPORT NUMBER PB-286 363/7 (NTIS); EPA/600/3-78/071 (EPA)
EPA-803915 (EPA Contract Number)

REPORT DATE Jul 78 42p

ABSTRACT

Rainfall samples were collected in Chicago, Illinois, and on Beaver Island, Michigan, and analyzed for polychlorinated biphenyls (PCBs). The precipitation weighted mean concentration of 35 samples of rain was 111 mg/l. (111 parts per trillion). This would result in the deposition of 4800 kg/yr of PCBs to the Lake from precipitation. Presently available evidence on other sources of PCBs to the Lake indicates that precipitation is now the major source of PCBs to the Lake. The future PCB problems in the Lakes will then be determined mainly by the magnitude of atmospheric inputs to the Lake. The concentrations of PCBs in rainfall were found to be as high on Beaver Island as in Chicago. Results obtained from the simultaneous sampling of air and precipitation indicate that PCBs are present in the atmosphere as vapor as well as being present on particulates. This result raises doubts as to the validity of results for the dry deposition of PCBs obtained from the use of collectors covered with mineral oil or other non-polar liquid. PCB concentrations in the parts per billion range obtained from gas samples from a vented sanitary landfill, indicate that PCB containing materials incorporated into landfills may be an important source of PCBs to the atmosphere.

TITLE Polychlorinated Biphenyls in the Surface Waters and Bottom Sediments of the Major Drainage Basins of the United States

AUTHOR Dennis, D. Steve

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C. Office of Pesticide Programs.

REPORT NUMBER PB-276 313/4 (NTIS)

REPORT DATE 1974 12p

NOTE Pub. in unidentified Jnl.
Included in the report, Journal Articles on Pesticide Residues in the Environment. Group 2, PB-276 312. Order as PB-276 312 from NTIS.

ABSTRACT

Data gathered from monitoring activities indicate the widespread occurrence of PCB's in surface waters and bottom sediments of the major drainage basins of the United States. A preliminary assessment of PCB levels shows median residue levels of the positive detections for the years 1971 to 1974 ranging between 0.1 to 3.0 micrograms/l for unfiltered water samples and from 1.2 to 160.0 micrograms/kg for bottom sediments. The highest levels were found in basins east of the Mississippi and bottom sediments may contain concentrations of PCB's many times higher than those in the overlying water.

TITLE Polychlorinated Biphenyls 1929-1979 (Final rept.)

AUTHOR Westin, Robert A.

Versar, Inc., Springfield, VA.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB-296 559/8 (NTIS); EPA/560/6-79/004 (EPA)
EPA-68-01-3259 (EPA Contract Number)

REPORT DATE 16 May 79 90p

ABSTRACT The primary emphasis of this report is a summary of the work that Versar performed in support of the EPA's regulatory activities involving polychlorinated biphenyls over the past four years. The report includes summaries of 24 reports on PCBs that Versar submitted to EPA during this period. Also included are a summary of the uses of PCBs from 1929 through 1979, a review of much of the early literature on the uses and toxicity of PCBs, and a discussion of the various regulatory activities that limited human exposure to PCBs and eventually banned their manufacture, processing, and use.

TITLE Polychlorinated Biphenyls: Ambient Water Quality Criteria Environmental Protection Agency, Washington, DC. Criteria and Standards Div.

REPORT NUMBER PB-296 803/0 (NTIS)

REPORT DATE 1978 202p

ABSTRACT Section 304(a) of the Clean Water Act (33 U.S.C. 1314(a)), requires EPA to publish and periodically update water quality criteria. These criteria are to reflect the latest scientific knowledge on the identifiable effects of pollutants on public health and welfare, aquatic life, and recreation. This report presents water quality criteria for polychlorinated biphenyls. It presents concentration criteria for the protection of fresh water and saltwater aquatic life. It presents 'safe' concentrations for humans, and in the case of suspect or proven carcinogens, gives various levels of incremental cancer risk. A section 304(a) water quality criterion

concentration of a water constituent or pollutant in ambient waters which, when not exceeded, will ensure a water quality sufficient to protect a specified water use. Under the Act a criterion is a scientific entity, based solely on data and scientific judgement. It does not reflect considerations of economic or technological feasibility nor is it a water quality standard and in itself has no regulatory effect.

TITLE Polychlorinated Biphenyls: Congener-Specific Analysis of a Commercial Mixture and a Human Milk Extract (Journal article)

AUTHOR Safe, S. ; Safe, L. ; Mullin, M.

CORPORATE SOURCE Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

SPONSOR Texas A and M Univ., College Station.

REPORT NUMBER PB85-230357 (NTIS); EPA/600/J-85/074 (EPA)

REPORT DATE 85 7p

NOTE Prepared in cooperation with Texas A and M Univ., College Station. Pub. in Jnl. of Agricultural and Food Chemistry 33, p24-29 1985. Not available from NTIS.

ABSTRACT On the basis of the relative retention times and response factors of all 209 synthetic polychlorinated biphenyls (PCBs), the paper reports the first congener-specific analysis of a commercial PCB preparation, Aroclor 1260, and the PCB composition of a human milk extract. The analysis indicates that Aroclor 1260 contains nearly 80 different PCB congeners with the major components identified as 2,2',3,3',4,5,6-,2,2', 4,4',5,5'-, 2,2',3,4,5,5'-, and 2,2',3,4,4',5-hexachlorobiphenyl and 2,2',3,3',4,4',5-, 2,2',3,3', 4,5,6'-, 2,2',3,4,4',5,5'-, and 2,2',3,4',5,5',6-heptachlorobiphenyl. In contrast, the major PCB components of the human milk fraction were the 2,4,4'-tri-, 2,4,4',5-tetra-, 2,2',4,4',5-penta-, 2,3',4,4',5-penta, 2,2',3,4,4',5'-hexa-, 2,2',4,4',5,5'-hexa, 2,2',3,3',4,4',5-hepta, and 2,2',3,4,4',5,5'-heptachlorobiphenyls. The significance of congener-specific PCB analysis is discussed in terms of the structure-activity effects on PCB persistence, bioaccumulation, and toxicity. (Copyright (c) 1985 American Chemical Society.)

TITLE Polychlorinated Biphenyls: Evidence of Transplacental Passage in the Sherman Rat

AUTHOR Curley, August ; Burse, V. W. ; Grim, Mary E.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Chamblee Toxicology Lab.

REPORT DATE 21 Oct 72 6p

NOTE Pub. in Fd Cosmet. Toxicol., v11 p471-476 1973.
Included in the report, Journal Articles on Toxicology. Group 3, PB-278 081. Order as PB-278 081 from NTIS

ABSTRACT The polychlorinated biphenyl (PCB), Aroclor 1254, was given orally in peanut oil to pregnant Sherman rats once daily from day 7 to day 15 of organogenesis. Dose levels were 0, 10 and 50 mg/kg/day. No statistical difference was found between control and dosed groups with respect to the total weight of litters, the percentage of pups born dead or the survival rate to weaning. Residue levels of PCB-derived material were measured in the foetuses, in the milk ingested by sucklings and in tissues of weanlings by electron-capture gas-liquid chromatography. Liver enlargement was observed in weanlings from dosed rats, but not in those from controls. There was a significant increase in the relative liver weights of weanlings from dosed rats compared with those from controls and the livers of most of the exposed weanlings contained enlarged hepatocytes, accompanied, in some cases, by cytoplasmic vacuolization and bile-duct proliferation, particularly in the group given the higher dosage.

TITLE Predicting Toxic Waste Concentrations in Community Drinking Water Supplies: Analysis of Vulnerability to Upstream Industrial Discharges

AUTHOR Goodrich, J. A. ; Clark, R. M.

CORPORATE SOURCE Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB84-206531 (NTIS); EPA/600/2-84/112 (EPA)

REPORT DATE Jun 84 145p

ABSTRACT In February, 1978 the Environmental Protection Agency (EPA) proposed amendments to the National Interim Primary Drinking Water Regulations to deal with the control of chloroform and synthetic organics in drinking water. In November, 1979 the regulation regarding synthetic organics was dropped because of the difficulty in defining, let alone assessing a community's vulnerability. The purpose of this study was to predict toxic waste concentrations in community drinking water supplies along the Ohio and Kanawha Rivers between Charleston, West Virginia and Cincinnati, Ohio using QUAL-II, a water quality simulation model. The most important factors to consider in identifying vulnerable communities are: flow characteristics of the source of supply, potency and persitance of the pollutants, amount and timing of discharge of pollutants, storage times of utilities and relative location of point sources and community intakes.

TITLE Prediction of Chemical Accumulation by Fish (Final rept.)

AUTHOR Spigarelli, S. A. ; Thommes, M. M. ; Jensen, A. L.

PERFORMING ORGANIZATION Argonne National Lab., IL.

SPONSOR Michigan Univ., Ann Arbor. School of Natural Resources.; Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

REPORT NUMBER PB84-156918 (NTIS); ANL/ERC-82-09 (Argonne National Lab.)

REPORT DATE Jan 82 47p

NOTE Prepared in cooperation with Michigan Univ., Ann Arbor. School of Natural Resources. Sponsored in part by Environmental Protection Agency, Chicago, IL. Great Lakes National Program Office.

ABSTRACT

A bioenergetics model was used to project the accumulation of lipophilic contaminants and to study the factors affecting uptake by Great Lakes fishes. Projections were compared with observed concentrations reported by monitoring agencies. Initial estimates for some model parameters were not applicable to all species, and adjustments of metabolic parameters were necessary to duplicate uptake kinetics among species. The exponent (on weight) for metabolic rate, lipid content, pollutant partitioning and caloric values of consumer and food were parameters that greatly affected the shape and rate of change in uptake curves. Bioaccumulation factors for any of the tested chemicals varied 1-2 orders of magnitude among species within an ecosystem, and typically exceed those predicted by the log BCF-log P regression by 1-2 orders of magnitude.

TITLE

Preliminary Operations Plan and Guidelines for the At-Sea Incineration of Liquid PCB (Polychlorinated biphenyl) Wastes (Final rept.)

AUTHOR

Hennings, T. J. ; Painter, P. A. ; Scinto, L. L. ; Takata, A. M.

PERFORMING ORGANIZATION

TRW, Inc., Redondo Beach, CA.

SPONSOR

Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER

PB83-181834 (NTIS); EPA-600/2-82-068 (EPA)
EPA-68-02-3174 (EPA Contract Number)

REPORT DATE

Apr 82 121p

ABSTRACT

The report is a preliminary operations plan and guidelines report for the disposal of polychlorinated biphenyl (PCB) wastes by at-sea incineration. The study was divided into two subtasks: Subtask A was the development of an inventory of government-owned PCB wastes suitable for at-sea incineration; and Subtask B was the development of operating plans and a schedule for an EPA-coordinated project to dispose of these wastes. Land-based operations include waste collection and preparation, transportation to a processing facility, processing of wastes and containers, interim storage of bulk liquids, transportation to a ship loading site on the Gulf of Mexico, and ship loading. Incineration site selection, permit requirements, incineration procedures, and cargo tank decontamination are addressed for at-sea operations.

TITLE Preliminary Sampling and Analytical Procedures for Evaluating the Disposal of Dredged Materials

AUTHOR Young, Ho L. ; Minard, David ; Scotten, Harold ; Thompson, Gary ; Conti, Mario

CORPORATE SOURCE Environmental Protection Agency, San Francisco, Calif. Region IX.

REPORT DATE 17 Apr 74 154p

REPORT NUMBER PB-285 607/8 (NTIS)

ABSTRACT This manual describes methods for the analysis of dredged materials and receiving waters. Its purpose is to establish uniform analytical procedures in accordance with the EPA Region IX dredge spoil disposal criteria.

TITLE Products of Thermal Degradation of Dielectric Fluids (Interim rept. Nov 84-May 85)

AUTHOR Swanson, S. E. ; Erickson, M. D. ; Moody, L.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB85-248987/XAB (NTIS); EPA/560/5-85/022 (EPA)
EPA-68-02-3938 (EPA Contract Number)

REPORT DATE May 85 32p

NOTE See also PB85-138535.

ABSTRACT The report describes the results of a series of experiments which were conducted to augment the data presented in a previous report (EPA 560-5-84-009). The work presented here includes both repeat runs of those previously reported and also investigations of materials not previously tested. The results of the repeat runs correlate well with the previously reported results. The formation of PCDFs and PCDDs from the PCB-spiked mineral oil, as well as the calculated destruction efficiencies for PCBs, closely match the previously reported results. The repeat chlorobenzene runs show higher levels of PCDF and PCDD formation than previously. However, several concentrations in the previous report are 'greater than' values; hence, comparison is difficult. Significant amounts of PCDFs and

PCDDs were formed from the tetrachloroethylene fluid. The two high temperature hydrocarbon fluids did not produce PCDFs or PCDDs. It appears that, under these thermal destruction conditions, the extent of PCDF formation varies among dielectric fluids by several orders of magnitude.

TITLE Regulatory Impact Analysis of the Use for PCB-Containing Electrical Equipment (Final rept.)

AUTHOR Queenan, III, Charles J. ; Schnitzer, Michael M. ; Moll, Amy ; Ng, Sammy K.

PERFORMING ORGANIZATION Putnam, Hayes and Bartlett, Inc., Cambridge, MA.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

REPORT NUMBER PB83-105742 (NTIS); EPA-560/4-82-004 (EPA)
EPA-68-01-5943; EPA-68-01-6287 (EPA Contract Numbers)

REPORT DATE Jul 82 203p

ABSTRACT On 12 February 1981, the U.S. Court of Appeals for the District of Columbia Circuit ordered EPA to conduct a rulemaking concerning the use of Polychlorinated Biphenyls (PCBs) in electrical equipment. EPA is now authorizing the use of PCBs in eight types of equipment. This Regulatory Impact Analysis was prepared to accompany the final rule. For each equipment type, the base case is the case where the use of all PCB equipment is authorized indefinitely. Alternatives include equipment phase-outs of varying length, retrofilling, secondary containment, and inspection and maintenance programs to reduce spill volume and/or exposure. The benefits of alternative regulations are the avoided injury to health and environment that would otherwise have resulted from the incremental release of PCBs into the environment.

TITLE Release of Polychlorinated Biphenyls from Contaminated Lake Sediments: Flux and Apparent Diffusivities of Four Individual PCBs (Journal article)

AUTHOR Fisher, J. Berton ; Petty, Robert L. ; Lick, Wilbert

PERFORMING Organization Case Western Reserve Univ., Cleveland, OH.

SPONSOR California Univ., Santa Barbara.; Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB83-247445 (NTIS); EPA-600/J-83-035 (EPA)
EPA-R-807308 (EPA Contract Number)

REPORT DATE c1983 15p

NOTE Prepared in cooperation with California Univ., Santa Barbara.
Pub. in Environmental Pollution (Series B) 5, p121-132 1983.
Not available from NTIS.

ABSTRACT The release of four individual polychlorinated biphenyls (2,3',5-trichlorobiphenyl, 2,2',4,5'-tetrachlrobiphenyl, 2,2',4,5,5'- and 2,2',3',4,5-pentachlorobiphenyl) from heavily contaminated Waukegan Harbor, Illinois, USA, sediments was studied in a laboratory microcosm. Polychlorinated biphenyls released from the sediments to overlying water were collected on a polyurethane foam trap. Release rate was a function of sediment concentration, chlorine substitution pattern and degree of chlorination. Because of their small apparent diffusivity, PCBs in contaminated sediments are quickly removed from communication with overlying water if the sediments are not affected by physical resuspension, bioturbation or bioaccumulation.

TITLE Report on the Feasibility of APEG Detoxification of Dioxin-Contaminated Soils (Technical rept. Dec 82-Dec 83)

AUTHOR Klee, A. ; Rogers, C. ; Tiernan, T.

PERFORMING ORGANIZATION Industrial Environmental Research Lab.-Cincinnati, OH.

SPONSOR Wright State Univ., Dayton, OH.

REPORT NUMBER PB84-170059 (NTIS); EPA-600/2-84-071 (EPA)

REPORT DATE Mar 84 75p

NOTE Prepared in cooperation with Wright State Univ., Dayton, OH.

ABSTRACT

The project was designed to verify in proof-of-principle studies, the efficacy of newly developed chemical reagents to destroy 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) dissolved in a solvent (toluene) and in contaminated soil samples from two locations in Missouri. The study demonstrated that alkali based polyethylene glycol reagents under ambient conditions can completely destroy within 48 hours 510 nanograms of TCDD dissolved in toluene. Also, in laboratory studies the APEG reagents significantly reduced within 21 days the 330 ppb of TCDD in a Missouri soil by 25 percent with a single APEG application and 68 percent with two APEG applications. This study has accomplished its proof-of-principle objective, however, further research is required and is to be initiated in FY-84 to establish optimal methods for applying APEGs to TCDD, PCBs and other toxic haloorganics in contaminated soils and waste materials.

TITLE

Residues of PCB (Polychlorinated Biphenyls) in a 'Cladophora' Community Along the Lake Huron Shoreline
(Journal article)

AUTHOR

Anderson, M. L. ; Rice, C. P. ; Carl, C. C.

PERFORMING ORGANIZATION

Michigan Univ., Ann Arbor. Great Lakes Research Div.

SPONSOR

Environmental Research Lab.-Duluth, MN.

REPORT NUMBER

PB84-101773 (NTIS); EPA-600/J-82-387 (EPA)
EPA-R-806800 (EPA Contract Number)

REPORT DATE

1982 8p

NOTE

Pub. in Jnl. of Great Lakes Research, v8 n1 p196-200 1982.

ABSTRACT

PCB residues were measured in samples of Cladophora, Ulothrix, net plankton, water, and fish collected in the Harbor Beach area of Lake Huron. The PCB patterns in the samples were found to match a mixture of Aroclor 1242 and 1254. Aroclor 1242 represented about 60% of the mixture in all the samples except the fish, where Aroclor 1242 represented about 75% of the total PCB measured. The accumulation factors observed in the progression from Cladophora to net plankton to fish were 1:15:30; these were similar to the concentration factors (1:14:44) developed on these ecosystem compartments in Lake Ontario during the 1972 IFYGL program.

TITLE Residues of PCB's and DDT in the Western Lake Superior Ecosystem (Journal article)

AUTHOR Veith, G. D. ; Kuehl, D. W. ; Puglisi, F. A. ; Glass, G. E. ; Eaton, J. G.

CORPORATE SOURCE Environmental Research Lab.-Duluth, Minn.

REPORT NUMBER PB-272 447/4 (NTIS); EPA/600/J-77/045 (EPA)

REPORT DATE 1977 14p

NOTE Pub. in Archives of Environmental Contamination and Toxicology, v5 p487-499 1977. Not available from NTIS.

ABSTRACT Fish from western Lake Superior (1972-73) contained DDT and PCB residues at concentrations greater than 0.1 ppm. The most predominant PCB's were those containing 3 to 6 chlorine atoms per molecule, and GLC data indicated that the mixtures were most like the commercial product Aroclor (R). Other chlorinated contaminants identified by GC/MS analyses and occurring at concentrations less than 0.1 ppm were hexachlorobenzene (C6C16), chlordane, nonaclor, and dieldrin. Lindane which has been previously reported in Lake Superior, was below the detection limit of approximately 0.01 ppm. The relationship between the size of lake trout and the concentration of total DDT in the fish was compared to measurements reported in previous studies. The comparison suggests that DDT residues have declined since 1968. Descriptors: *Pesticides; *Fishes; *Lake Superior; DDT; Residues; Biphenyls; Chlorine organic compounds; Trout; Concentration(Composition); Size determination; Chlorodan; Naphthalene compounds; Benzene; Dieldrin; Chlorohydrocarbons; Halohydrocarbons; Tolerances(Physiology)

TITLE Residues of Polychlorinated Biphenyls in the General Population of the United States

AUTHOR Kutz, Frederick W. ; Strassman, S. C.

CORPORATE SOURCE Environmental Protection Agency, Washington, D.C.

REPORT NUMBER PB-276 331/6

REPORT DATE 1973 5p

NOTE Pub. in unidentified Jnl.
Included in the report, Journal Articles on Pesticide Content in Food and Man, PB-276 326. Order as PB-276 326 from NTIS.

ABSTRACT Residues of polychlorinated biphenyls have been found in human tissue and in milk collected from the general population of the United States. In a national survey of human adipose tissue during fiscal years 1973 and 1974, 35.1 and 40.3 percent, respectively, of the tissue collected contained levels of 1ppm or more of polychlorinated biphenyls on a wet-weight basis. Electron capture-gas chromatographic analysis of this tissue revealed that the compounds found in adipose tissue were most comparable to those prevalent in Aroclor 1254 and Aroclor 1260. Additionally, semi-quantitative estimation of these residues was accomplished by thin-layer chromatography. Evidence from gas-liquid chromatography-mass spectrometry indicated that the most frequently encountered polychlorinated biphenyl residues were penta-, hexa-, and heptachloro-biphenyl compounds.

TITLE Results of the Initial Trial Burn of the EPA-ORD (Environmental Protection Agency-Office of Research and Development) Mobile Incineration System

AUTHOR Yezzi, Jr., J. J. ; Brugger, J. E. ; Wilder, I. ; Freestone, F. ; Miller, R. A.

PERFORMING ORGANIZATION Municipal Environmental Research Lab.-Cincinnati, Edison, NJ. Oil and Hazardous Materials Spills Branch.

SPONSOR IT Corp., Edison, NJ.

REPORT NUMBER PB84-168673 (NTIS); EPA-600/D-84-088 (EPA)

REPORT DATE 1984 36p

NOTE Prepared in cooperation with IT Corp., Edison, NJ.

ABSTRACT This paper discusses the sampling and analytical methods for, the implementation of, and the results of the initial trial burn conducted with the EPA-ORD Mobile Incineration System. The system was developed to destroy hazardous substances and toxic wastes on site. The trial burn program consisted of five tests with different liquid feeds, (including tetrachloromethane and PCBs) to evaluate the system's capability for destroying organic hazardous substances while controlling emissions of HCl, particulate matter, and hydrocarbons in compliance with the requirements of the Federal RCRA and TSCA, as well as those of the New Jersey Department of Environmental Protection.

TITLE Reversible and Resistant Components of PCB Adsorption-Desorption: Adsorbent Concentration Effects (Journal article)

AUTHOR Di Toro, D. M. ; Horzempa, L. M. ; Casey, M. M. ; Richardson, W. Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

REPORT NUMBER PB83-189076 (NTIS); EPA-600/J-82-298 (EPA)

REPORT DATE 1982 16p

NOTE Pub. as Jnl. of Great Lakes Research 8(2), p336-349 1982.

ABSTRACT It is the purpose of this paper to present the analysis of these experimental data and to relate these findings to the conventional descriptions of adsorption-desorption as applied to the computation of the fate of PCB in natural water systems.

TITLE Review of PCB Levels in the Environment (Final rept.)

AUTHOR Finlay, Doris J. ; Siff, Frederick H. ; DeCarlo, Vincent J.

CORPORATE SOURCE Environmental Protection Agency, Dallas, Tex. Region VI.

REPORT NUMBER PB-253 735/5 (NTIS); EPA/560/7-76-001 (EPA)

REPORT DATE Jan 76 143p

ABSTRACT This study reviews the current PCB data base to assess the PCB levels in the environment on a national level; the full spectrum of PCB levels reported in man and the environment were of interest. Data were obtained from a number of national monitoring programs, the literature and many unpublished reports. The data examined was inclusive to December 1, 1975. It should be stressed at the outset, that due to the complexity and difficulty of PCB identification and measurement, that levels reported are not really comparable between different investigators. This aspect could not be compensated for or identified in the data presented.

TITLE	Review of the Environmental Fate of Selected Chemicals (Final rept. on Task 3)
AUTHOR	Radding, Shirley B. ; Liu, David H. ; Johnson, Howard L. ; Mill, Theodore
PERFORMING ORGANIZATION	Stanford Research Inst., Menlo Park, Calif.
SPONSOR	Environmental Protection Agency, Washington, D.C. Office of Toxic Substances.
REPORT NUMBER	PB-267 121/2 (NTIS); EPA/560/5-77/003 (EPA) EPA-68-01-2681 (EPA Contract Number)
REPORT DATE	May 77 150p
NOTE	See also Final rept. on Task 1 dated 10 Jan 75, PB-238 908.
ABSTRACT	A review of the recent literature on sources, production, environmental fate, and bioaccumulation has been carried out by SRI on 26 classes of compounds. These included epoxides, haloolefins, aldehydes, alkyl and benzyl halides, peroxides, hydroperoxides and peracids, polyhalomethanes, aromatic amines, polychlorinated biphenyls, azo dyes, carbamic acid esters, hydrazines, acyl halides and ketene, phosphoric acid esters, aziridines, lactones, alkyl sulfates, sulfones, aryl dialkyltriazenes, diazoalkanes, haloalcohols, haloethers, hydroxylamines, nitrosamines, nitrofurans, and azides.

TITLE Role of Physico-Chemical Properties of Aroclors 1016 and 1242 in Determining Their Fate and Transport in Aquatic Environments (Journal article)

AUTHOR Paris, Doris F. ; Steen, William C. ; Baughman, George L.

CORPORATE SOURCE Environmental Research Lab., Athens, Ga.

REPORT NUMBER PB-282 367/2 (NTIS); EPA/600/J-78-014 (EPA)

REPORT DATE 1978 9p

NOTE Pub. in Chemosphere v7 n4, p319-325, 1978.

ABSTRACT Water solubilities of Aroclors 1016 and 1242 and the sorption and volatilization characteristics of the two polychlorinated biphenyls in aqueous solutions were studied. Water solubilities of Aroclors 1016 and 1242 were 0.42(+ or - 0.08) and 0.34(+ or - 0.06) mg/l, respectively. Partition coefficients for both Aroclors to bacteria and seston ranged from 1.2 to 8300. Volatilization studies indicate that the rate coefficient for loss of Aroclor 1016 or 1242 from water is about one-fourth the oxygen reaeration rate coefficient for the same system.

TITLE Sampling and Analysis Protocol for Assessing Organic Emissions from Stationary Combustion Sources in Exposure Evaluation Division Combustion Studies
(Methods manual)

AUTHOR Stanley, J. S. ; Haile, C. L. ; Small, A. M. ; Olson, E. P.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

REPORT NUMBER PB86-147923/XAB (NTIS); EPA/560/5-82/014 (EPA)
EPA-68-01-5915 (EPA Contract Number)

REPORT DATE Jan 82 40p

NOTE Sponsored by Environmental Protection Agency, Washington, DC. Office of Pesticides and Toxic Substances.

ABSTRACT The sampling and analysis methods described in the report were specifically designed for use in an ongoing nationwide survey of emissions of organic pollutants from stationary combustion sources. The primary focus of the survey is on polynuclear aromatic hydrocarbons (PAHs) and polychlorinated aromatic hydrocarbons including polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), and polychlorinated dibenzofurans (PCDFs). To date, these procedures have been used by Midwest Research Institute (MRI) to survey emissions from coal-fired utility boilers, a co-fired (coal + refuse-derived fuel) utility boiler, and a municipal refuse incinerator. The document was prepared by MRI as a guideline for laboratories who may participate in the study, and for other researchers who wish to use these methods.

TITLE Sampling Survey Related to Possible Emission of Polychlorinated Biphenyls (PCBs) from the Incineration of Domestic Refuse

AUTHOR Timm, Christopher M.

CORPORATE SOURCE Environmental Protection Agency, Chicago, Ill. Region V.

REPORT DATE Nov 75 53p

ABSTRACT

During the three week period October 20-November 7, 1975, bient and stack sampling for polychlorinated biphenyls (PCBs) were conducted at a domestic incinerator in an effort to quantify the levels of PCB emissions associated with the incineration of domestic refuse. The stack sampling was performed at an incinerator equipped with an electrostatic precipitator using a modified EPA Method 5 sampling train. Xylene was used as the solvent for any gaseous PCBs present in the effluent. Ambient sampling was conducted, upwind and downwind of the incinerator, using hexane as the solvent in duplicate sets of three impingers in series. It was concluded that the particulate emissions contain PCBs; however, the amount emitted does not result in a measurable increase in existing ambient levels of PCB; the presence of PCBs in the vapor state could not be established because of contamination in the xylene used as the solvent; and the use of hexane as the absorbing reagent is appropriate for ambient sampling.

TITLE

Short Cycling of Contaminants by Zooplankton and Their Impact on Great Lakes Ecosystems
(Journal article)

AUTHOR

McNaught, D. C.

PERFORMING ORGANIZATION

Minnesota Univ., Minneapolis. Dept. of Ecology and Behavioral Biology.

SPONSOR

Environmental Research Lab.-Duluth.

REPORT NUMBER

PB84-123819 (NTIS); EPA-600/J-82-408 (EPA)
EPA-R-804573 (EPA Contract Number)

REPORT DATE

c1982 11p

NOTE

Pub. in Jnl. of Great Lakes Research, v8 n2 p360-366 1982.
Not available from NTIS.

ABSTRACT

Field evidence for short cycling of organic contaminants, from sources at the air-water interface directly into the zooplankton and fishes, has generally been lacking in the literature. The potential mechanisms,

however, have been intensively explored; these are dominated by the formation of organic platelets at the air-water interface and the availability to grazers of other forms of suspended detritus. Susceptibility of the zooplankton to short cycling of contaminants thus depends upon their demonstrated propensity to feed near the surface of the lakes. As contrasted with missing environmental information, experimental evidence for short cycling is clear; the experimental inclusion of small, organic particles along with natural assemblages of nannoplankton increased PCB loading to the zooplankton 2.3 times. Further field evidence on the magnitude of short cycling must be sought, because contaminants soluble in oils influence the entire food chain. (Copyright (c) Internat. Assoc. Great Lakes Res. 1982.)

TITLE Simplified Micro Perchlorination Method for Polychlorinated Biphenyls in Biological Samples
(Journal article)

AUTHOR Crist, Howard L. ; Moseman, Robert F.

Health Effects Research Lab., Research Triangle Park, N.C. Environmental Toxicology Div.

REPORT NUMBER PB-278 379/3 (NTIS); EPA/600/J-77/102 (EPA)

REPORT DATE 25 Mar 77 7p

NOTE Pub. in the Jnl. of the Association of Official Analytical Chemists, v60 n6 p1277-1281 1977.

ABSTRACT A simplified methodology is presented for the micro determination of polychlorinated biphenyls (PCBs) in biological samples, by conversion to the decachlorobiphenyl (DCB) derivative. Beef adipose tissue and human milk extracts were fortified with PCB standards at 0.1-5.0 ppm, and perchlorinated with antimony pentachloride (SbCl5). Several Aroclors representing various degrees of chlorine content were investigated to assess the efficiency of conversion to DCB. Samples were cleaned up on a Florisil mini column and the PCBs were quantitated by electron capture GLC. Several chlorinated pesticides which were subjected to the perchlorination procedure did not interfere. As little as 0.1 ppm PCBs in 500 mg tissue extract can be recovered at 79-99%. The background DCB content of several brands of SbCl5 was determined. The levels of PCBs in human milk obtained by perchlorination technique are compared with data acquired by electron capture gas-liquid chromatography in which the individual chlorobiphenyls in the sample are measured.

TITLE Size Dependent Model of Hazardous Substances in Q Aquatic Food Chain

AUTHOR Thomann, Robert V.

PERFORMING ORGANIZATION Manhattan Coll., Bronx, N.Y.

SPONSOR Environmental Research Lab.,-Duluth, Minn.

REPORT NUMBER PB-281 009/1 (NTIS); EPA/600/3-78/036 (EPA)
EPA-R-803680 (EPA Contract Number)

REPORT DATE Apr 78 51p

ABSTRACT A model of toxic substance accumulation is constructed that introduces organism size as an additional independent variable. The model represents an ecological continuum through size dependency; classical compartment analyses are therefore a special case of the continuous model. Size dependence is viewed as a very approximate ordering of trophic position. The analysis of some PCB data in Lake Ontario is used as an illustration of the theory. A completely mixed water volume is used. Organism size is considered from 100 micrometers to 1,000,000 micrometers. PCB data were available for 64 micrometers net hauls, alewife, smelt, sculpin and coho salmon. The analysis indicated that about 30% of the observed 6.5 micrograms PCB/gm fish as the coho salmon size range is due to transfer from lower levels in the food chain and about 70% from direct water intake. The model shows rapid accumulation of PCB with organism size due principally to decreased excretion rates and decreased biomass at higher trophic levels.

TITLE Sources of Emissions of Polychlorinated Biphenyls into the Ambient Atmosphere and Indoor Air

AUTHOR MacLeod, Kathryn E.

CORPORATE SOURCE Health Effects Research Lab., Research Triangle Park, NC. Analytical Chemistry Branch.

REPORT NUMBER PB-297 122/4 (NTIS); EPA/600/4-79/022 (EPA)

REPORT DATE Mar 79 81p

ABSTRACT

Polychlorinated biphenyls (PCB) have been identified in air samples from many parts of the world since 1960s. This study was undertaken to identify and compare different sources of PCB in indoor and outdoor air. All sampling was performed in central North Carolina. The suspected sources that were tested were flourescent light ballasts, landfills, electrical substations, a transformer manufacturer, and the sites of illegal dumpings. Defective light ballasts emit large quantities of PCB and are an important indoor source. Capacitors in small electrical equipment may also be an important source. In general, indoor air levels of PCB were at least one order of magnitude higher than outdoor levels. The data indicate that the landfills and electrical substations tested are not major sources of PCB. The transformer manufacturer had elevated levels of PCB in the immediate area of the plant but did not contribute greatly to the levels found off the property. The spill sites also had elevated levels of the contaminant in their immediate area, but the levels 50-100 m away were normal for rural areas.

TITLE State Roles/Activities Session, March 3, 1977, 1:00 P. M.

AUTHOR Hesse, John ; Kleinart, Stanton ; Miller, Warren ; Duprey, Robert

PERFORMING ORGANIZATION Environmental Protection Agency, Chicago, Ill. Air and Hazardous Materials Div.

SPONSOR Michigan Dept. of Natural Resources, Lansing.; Wisconsin Dept. of Natural Resources, Madison.; Illinois State Environmental Protection Agency, Springfield.

REPORT NUMBER PB-256 148/7 (NTIS); EPA/905/9-77/005 (EPA)

REPORT DATE 3 Mar 77 72p

NOTE Prepared in cooperation with Michigan Dept. of Natural Resources, Lansing, Wisconsin Dept. of Natural Resources, Madison, and Illinois State Environmental Protection Agency, Springfield. See also PB-265 147.

ABSTRACT

These panelists talked about their State agencies that are directly concerned with the Toxic Substances Control Act. They stated their concerns about the Act, specifically dealing with its repercussions, funding, and potential problems in putting the Act into effect and enforcing it. Those speaking represented the States of Michigan, Wisconsin, Illinois, as well as the U.S. Environmental Protection Agency, Region V. A brief period of questions and answers followed the panelists' comments. The major thrust of the programs are concernen with the contaminants such as mercury and PCB's which accumulate in fish and other animals.

TITLE Statement of Concerns of the Lake Michigan Toxic Substances Committee Related to Polychlorinated Biphenyls

AUTHOR Bremer, Karl E.

CORPORATE SOURCE Environmental Protection Agency, Chicago, Ill. Region V.

REPORT DATE Jun 75 31p

ABSTRACT On May 22-23, 1975, a meeting of the Lake Michigan Toxic Substances Committee was called to discuss the concerns of the states and Federal agencies related to problems with polychlorinated biphenyls (PCBs). At the conclusion of this meeting a number of concensus conclusions were drawn and a recommendation was made to ban nationally all domestic and imported PCBs destined for use other than in transformers and capacitors and that even that use be critically reviewed in light of currently available or potential replacement products. This report presents evidence to support the conclusions drawn and the recommendation.

TITLE Studies on Measurement of PCB in Exhaust Gases (Haigasuchu no PCB no Sokutei ni Tsuite)

AUTHOR Kawase, Z. ; Arai, M. ; Yoshida, Y.

CORPORATE SOURCE Environmental Protection Agency, Research Triangle Park, N.C. Translation Services Section.

REPORT NUMBER PB-259 071-T (NTIS); EPA-TR-76-544 (EPA)

REPORT DATE 1973 7p

NOTE Trans. of Taiki Osen Kenkyu (Japan) v8 n3 p598 Oct 73.(PC A02/MF A01)

ABSTRACT Polychlorinated biphenyls (PCB) in the combustion gas of domestic refuse were measured at two incinerators. First, the measurement method was devised by examination of absorbent and capturing rates. The tests using several organic solvents showed that 10% glycerine solution yielded the best result. For a capturing device, between a flask and an absorption jar, a tube packed with glass wool was installed. The capturing rate of the tube was 83%, and together with the absorption jar, the total capturing rate was 96%, and in some cases 97.9%. This method was then applied to the combustion gas of incinerators. The PCB content in the gas was small, with the maximum measurement of 0.30 microgram/N cu m, which was captured in the tube; there was no trace in the absorbent.

TITLE Study of PCB Destruction Efficiency and Performance for a Coal Fired Utility Boiler. Volume 2. Test Protocol (Final rept. Mar 80-May 82)

AUTHOR Whitmore, F. C. ; Barden, J. D.

PERFORMING ORGANIZATION Versar, Inc., Springfield, VA.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB84-110154 (NTIS); EPA-600/2-83-101B (EPA)
EPA-68-02-3181 (EPA Contract Number)

REPORT DATE Oct 83 89p

NOTE See also Volume 1, PB84-110147.

ABSTRACT As a result of the actions of the Environmental Protection Agency (EPA) in banning the manufacture of PCBs and in requiring that PCBs and PCB contaminated material still in service be withdrawn as soon as is practical, there is a large and growing reservoir of PCB-contaminated hydrocarbons in the United States. In any case, many of these contaminated materials possess significant energy content and therefore could serve as fuel for some industrial processes. In this era of very high fuel costs, there is great demand for PCB-contaminated materials to be used as fuel. A further impetus in this direction is the fact that the PCB Disposal Regulations (referred to herein as the Regulations) specify that incineration is the preferred method of disposal of PCBs and of PCB-contaminated materials. In view of these considerations, it is highly desirable that a series of co-firing experiments be carried out on a coal-fired high efficiency power boiler. Such a test series is described in this document.

TITLE	Study of PCB Destruction Efficiency and Performance for a Coal-Fired Utility Boiler. Volume 1. Test and Evaluation (Final rept. Mar 80-May 82)
AUTHOR	Whitmore, F. C. ; Barden, J. D.
PERFORMING ORGANIZATION	Versar, Inc., Springfield, VA.
SPONSOR	Industrial Environmental Research Lab., Research Triangle Park, NC.
REPORT NUMBER	PB84-110147 (NTIS); EPA-600/2-83-101A (EPA) EPA-68-02-3138 (EPA Contract Number)
REPORT DATE	Oct 83 79p
NOTE	See also Volume 2, PB84-110154.
ABSTRACT	The report gives results of an evaluation of the adequacy of a large coal-fired utility boiler for disposal of oils containing 50-499 ppm of PCBs under conditions set by the PCB Disposal Regulations. TVA's Widows Creek Boiler No. 1 was used for the tests. In these tests, all effluent streams were sampled and analyzed, to determine representative values of Destruction Efficiency (DE) for this technology. On the basis that both the flue gases and the fly ash could have contained PCB concentrations just below the quantifiable level, the minimum (worst case) DE can be determined. The class of high heating value materials (such as used tranformer oil, etc.) that exhibit PCB concentrations between 50 and 500 ppm of PCBs can only be burned in high efficiency power boilers (or in PCB incinerators). It has been a matter of some concern that the ability of such high efficiency boilers to produce acceptable destruction efficiencies (DE) be determined in representative systems. The report that follows will discuss a series of tests on a coal-fired boiler which addresses this concern.

TITLE Summary Characterizations of Selected Chemicals of Near-Term Interest (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB-292 419/9 (NTIS); EPA/560/4-76/008 (EPA)

REPORT DATE Sep 76 31p

NOTE See also report dated Sep 75, PB-246 356.

ABSTRACT This report includes summary characterizations of 8 chemicals of near-term concern to EPA. The report summarizes (a) health and ecological effects and environmental behavior, (b) sources, environmental levels and exposed populations, (c) technologic and economic aspects and (d) steps that have been taken and are being taken.

TITLE Superfund Record of Decision (EPA Region 1): Picillo Farm, Coventry, Rhode Island, September 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB86-133998/XAB (NTIS); EPA/ROD/R01-85/012 (EPA)

REPORT DATE 30 Sep 85 72p

ABSTRACT The Picillo Farm site is located in Coventry, Rhode Island, approximately 20 miles southwest of Providence. Drums containing hazardous wastes and bulk wastes were illegally disposed within an 8-acre area of the Picillo Farm over a period of months in 1977. A series of trenches--the northwest trench, northeast trench, west trench, south trench, and two slit trenches--were used for this activity. In September 1977, an explosion and fire at the site brought the dumping activities to the attention of regulatory agencies. Since September 1977, a number of investigations and remedial activities have been conducted at the site. PCBs, organics, and phenols were identified in onsite soil. The selected remedial actions are included.

TITLE Superfund Record of Decision (EPA Region 1): Re-Solve, Inc. Site, Massachusetts, July 1982 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213627/XAB (NTIS); EPA/ROD/R01-82/004 (EPA)

REPORT DATE 1 Jul 82 13p

NOTE See also PB85-213619 and PB85-213635.
Also available in set of 6 reports, PB85-213585.

ABSTRACT The Re-Solve, Inc. site was used as a solvent reclamation facility for approximately 24 years until operations ceased in 1980. High concentrations of PCB's, volatile organics and heavy metals have been measured. These contaminants are migrating off-site via surface runoff and ground water. The contaminated ground water plume is migrating towards a recreational pond which drains into a lake designated as a secondary water supply for the City of Fall River. In addition, the site is located over an aquifer which serves as a recharge area for a portion of the Town of North Dartmouth where a new municipal well is scheduled to be installed. The cost-effective remedial action for this site includes: removing contents of four unlined lagoons, soil from 'hot spots', and soil from a former oil spreading area for disposal off-site at a RCRA approved facility. Capping of the entire 6-acre site is also included. The estimated capital cost for the selected alternative is $3,050,000. Annual operation and maintenance costs were estimated to be $36,000.

TITLE Superfund Record of Decision (EPA Region 2): Burnt Fly Bog Site, New Jersey, November 1983 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213676/XAB (NTIS); EPA/ROD/R02-83/002 (EPA)

REPORT DATE 16 Nov 83 27p

NOTE See also PB85-213668 and PB85-213684.
Also available in set of 11 reports PC E99, PB85-213650.

ABSTRACT The Burnt Fly Bog site is located in Marlboro Township, Monmouth County and Old Bridge Township, Middlesex County, New Jersey. Between 1950 and 1956, the site had been used for lagoon storage and settling of reprocessed oil, storage of filter clay from oil reprocessing operations, sanitary landfilling, and sand and gravel pit operations. During these operations, hazardous substances were improperly disposed of resulting in contamination throughout the 60-acre study area. The selected remedial action for this site includes: excavation and disposal off-site liquids, sludges, asphalt piles, drums, contaminated soil from lagoons and wetlands, restore site contours and vegetation; monitor ground water for 5-year period. The approach is a three-phase action. Capital costs for the selected alternative are estimated at $2,200,000 for Phase I, $5,110,000 for Phase II and $60,000 per year for operation and maintenance.

TITLE Superfund Record of Decision (EPA Region 2): Bridgeport Site, New Jersey, December 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER EPA/ROD/R02-84/001 (EPA)
PB85-213668/XAB (NTIS)

REPORT DATE 31 Dec 84 60p

NOTE See also PB85-213676. Portions of this document are not fully legible. Also available in set of 11 reports PC E99, PB85-213650.

ABSTRACT This 30-acre site is located approximately one mile east of the Town of Bridgeport and about two miles south of the Delaware River. The site is an abandoned waste oil storage and recovery facility which operated from 1950 through the early 1970's. The site includes a tank farm consisting of 90 tanks and process vessels, drums, tank trucks and a 12.7 acre waste oil and wastewater lagoon. The lagoon is divided into three layers: an oily upper layer, an aqueous middle layer, and bottom sludge/sediment deposits. Sampling of these lagoon layers and the ground water reveal average PCB concentrations in excess of 500 ppm; organics, such as benzene, methylene chloride and toluene, at concentrations up to 1,000 ppb; and acetone at levels up to 70 ppm. The cost-effective remedial alternative selected for the first operable unit includes disposal of oily waste and sediment/sludge via on-site incineration; removal and disposal of contaminated water via an on-site treatment system; drum excavation and removal; maintenance pumping to prevent further migration of the contaminated plume; complete removal of tanks and waste; installation of a water supply pipeline from an existing pump station; and a second phase RI/FS to determine appropriate ground water cleanup and lagoon closure remedies. The estimated total project capital cost for this remedy is $57,672,000 and the estimated 10-year operation and maintenance costs for the water supply pipeline is $20,000.

TITLE Superfund Record of Decision (EPA Region 2): Chemical Control Site, Elizabeth, New Jersey, September 1983 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213684/XAB (NTIS); EPA/ROD/R02-83/003 (EPA)

REPORT DATE 19 Sep 83 8p

NOTES See also PB85-213676 and PB8-213692.
Also available in set of 11 reports, PB85-213650.

ABSTRACT The Chemical Control site is located in the City of Elizabeth in Union County, New Jersey. This site operated as a hazardous waste storage, treatment and disposal facility accepting various types of chemicals including acids, arsenic bases, cyanides, flammable solvents, PCBs, compressed bases, biological agents, and pesticides. The cost-effective remedial action selected for this site includes removal of gas cylinders, reconstruction of storm sewer catch basins and grates, cleaning of the storm sewer system, construction of curbing and decontamination of five box haulers and one vacuum truck on-site. The hazardous materials generated by these remedial actions will be transported off-site to a RCRA approved disposal site. The estimated project cost is $732,500.

TITLE Superfund Record of Decision (EPA Region 2): Goose Farm, Plumsted Township, New Jersey, September 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB86-133972/XAB (NTIS); EPA/ROD/R02-85/016 (EPA)

REPORT DATE 27 Sep 85 112p

ABSTRACT The Goose Farm site is located approximately two miles northeast of the Town of New Egypt in Plumsted Township, Ocean County, New Jersey. The Goose Farm was used as a hazardous waste disposal site from the mid 1940's to the mid 1970's by a manufacturer of polysulfide rubber and solid rocket fuel propellant. The majority of wastes were dumped into a pit dug through the fine sand. The dimensions of the pit were approximately 100 x 300 x 15 feet. Lab packs, 55 gallon drums, and bulk liquids were dumped into the pit. Investigations have found contaminated soils containing volatile, acid and base/neutral organic pollutants throughout the disposal area. In addition, sampling shows contamination of ground water up to 570 ppm total priority pollutants and contamination of the surface water up to 1100 ppb total volatile organics. The recommended remedial alternative for this site is expected to be implemented in a phased manner.

TITLE Superfund Record of Decision (EPA Region 2): Hudson River PCBs (Polychlorinated Biphenyls) Site, New York, September 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213692/XAB (NTIS); EPA/ROD/R02-84/004 (EPA)

REPORT DATE 25 Sep 84 48p

NOTE See also PB85-213684 and PB85-213700. Portions of this document are not fully legible.
Also available in set of 11 reports, PB85-213650.

ABSTRACT During a 30-year period ending in 1977, the Hudson River was contaminated with polychlorinated biphenyls (PCBs) from two capacitor manufacturing plants owned by the General Electric Company. Field surveys have shown that PCB contamination is found in 40 submerged sediment hot spots, 5 exposed shoreline remnant deposits, dredge spoils on the banks of the upper Hudson River and in estuary sediments. The remedial alternative selected for this site consists of in-place containment of remnant shoreline deposits. This temporary solution includes: covering affected areas with an 18-inch thick layer of subsoil followed by a 6-inch layer of topsoil, grading and seeding the cover to minimize erosion and, if necessary, bank stabilization to prevent scouring. An alternative to address submerged PCB hot spots was not selected at this time because of the lack of existing data to establish that existing technology would be effective and reliable. The State will conduct a dredging demonstration program using funds from Section 116 of the Clean Water Act. If adequate, the information from this demonstration project will be used to develop a remedial action which will address both river sediments and the exposed remnant deposits.

TITLE Superfund Record of Decision (EPA Region 2): Krysowaty Farm Site, Hillsborough, New Jersey, June 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213700/XAB (NTIS); EPA/ROD/R02-84/005 (EPA)

REPORT DATE 20 Jun 84 48p

NOTE See also PB85-213692 and PB85-213718. Portions of this document are not fully legible.
Also available in set of 11 reports, PB85-213650.

ABSTRACT The Krysowaty farm is located on a 42-acre tract of land in Hillsborough Township, New Jersey. The disposal of chemical wastes at the site was reported to have occurred between 1965 and 1970. An estimated 500 drums of paint and dye wastes were dumped, crushed and buried at the site. In addition to drums, other wastes including demolition debris, tires, automobiles, bulk waste, solvents, waste sludge and other materials were disposed at the site. The cost-effective remedial alternative selected for this site is excavation and off-site disposal of contaminated soils and wastes at a facility approved for PCBs and monitoring of existing on-site wells semi-annually for a period of 5 years. A permanent alternative water supply will also be provided to potentially affected residences as part of the remedial action. The capital cost for the selected alternative is $2,164,014 and the O&M costs for the project, which include water usage cost (20 year present worth) and post closure environmental monitoring, are $145,698.

TITLE Superfund Record of Decision (EPA Region 2): Pijak Farm Site, New Jersey, September 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213742/XAB (NTIS); EPA/ROD/R02-84/009 (EPA)

REPORT DATE 30 Sep 84 43p

NOTE See also PB85-213734 and PB85-213759. Portions of this document are not fully legible.
Also available in set of 11 reports, PB85-213650.

ABSTRACT The Pijak Farm is located approximately two miles northeast of the Town of New Egypt in Plumsted Township, Ocean County, New Jersey. The site is approximately 87 acres and is relatively flat with portions that drop off into a marshy, wooded flood plain. Between 1963 and 1970, drums and free-flowing liquids from a facility disposing of specialty and research chemicals were dumped into a natural ditch which traversed the site and were later covered with soil. The deteriorated remains of drums are visible along the edge of the flood plain. Contaminants found at the site include: halogenated hydrocarbons, PCBs, phenolic compounds and oil sludges. The principle contaminants found onsite are not priority pollutants. The cost-effective remedial alternative selected for this site includes: removal and off-site disposal of all drums and lab packs to a RCRA facility; excavation and off-site disposal of visibly contaminated soil to a RCRA facility; pumping and removal of contaminated ground water, as necessary, during excavation; monitoring on-site wells, annually, for a five year period and sediment control during excavation and sampling efforts. The capital cost for the selected alternative is estimated to be $1,962,750 and the five-year O&M ground water monitoring costs are estimated to be $53,600.

TITLE Superfund Record of Decision (EPA Region 2): PAS (Pollution Abatement Services) Oswego Site, New York, June 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213734/XAB (NTIS); EPA/ROD/R02-84/008 (EPA)

REPORT DATE 6 Jun 84 32p

NOTE See also PB85-213726 and PB85-213742.
Also available in set of 11 reports, PB85-213650.

ABSTRACT The Pollution Abatement Services (PAS) site, which is located in the City of Oswego, NY, was used as a chemical waste storage and processing facility. The site is bounded on the east, north, and west by wetlands from two stream channels. Just to the north of PAS the two streams converge and flow into Lake Ontario. The soil and ground water are contaminated with waste acids and alkalis, PCB-contaminated solids and liquids, halogenated organics, organic resins, and heavy metal-laden wastewater. The cost-effective remedial alternative includes: limited excavation and removal of contaminated soil, subsurface tanks, and drums to a RCRA approved landfill; construction of a perimeter slurry wall; site grading and capping in accordance with RCRA Part 264; ground water recovery; leachate collection; on-site ground water and leachate treatment; and ground water monitoring in accordance with RCRA Part 264. The capital cost for the selected alternative is $1,363,700 and the annual O&M cost is $117,000.

TITLE Superfund Record of Decision (EPA Region 2): Wide Beach Development Site, Brant Township, New York, September 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB86-133840/XAB (NTIS); EPA/ROD/R02-85/018 (EPA)

REPORT DATE 30 Sep 85 98p

ABSTRACT

The Wide Beach Development site is a small lake-side community located in the Town of Brant, in southern Erie County, New York. Between 1968 and 1978 approximately 155 cubic meters of waste oil, some of which was contaminated with Polychlorinated Biphenyls (PCBs), was applied to the local roadways for dust control by the Wide Beach Homeowners Association. The source of the waste oil is being investigated, however, drums labeled as dielectric coolant were found onsite. In 1980, the installation of a sanitary sewer line in the development resulted in the excavation of highly contaminated soil from the roadways and their vicinity. Because it was not known at that time that a PCB problem existed, excavated soil was used as fill in several yards and in a community recreation area. Subsequent sampling revealed the presence of PCBs in the air, roadway dust, soil, vacuum cleaner dust, and water samples from private wells. The selected remedial action for this site is included.

TITLE

Superfund Record of Decision (EPA Region 3): Harvey-Knott Drum Site, New Castle County, Delaware, September 1985 (Final rept)

CORPORATE SOURCE

Environmental Protection Agency, Washington, DC.

REPORT NUMBER

PB86-133915/XAB (NTIS); EPA/ROD/R03-85/017 (EPA)

REPORT DATE

30 Sep 85 54p

ABSTRACT

The Harvey-Knott Drum Site is located in New Castle County, Delaware, approximately one-half mile east of the Maryland-Delaware border. The Harvey and Knotts Trucking, Inc., operated an open dump and burning ground on the site between 1963 and 1969. The facility accepted sanitary, municipal, and industrial wastes believed to be sludges, paint pigments, and solvents. Wastes were emptied onto the ground, into excavated trenches, or left in drums (some of which were buried). Some of these wastes were either burned as a means of reducing waste volume, or allowed to seep into the soil. Contamination of soil, surface water, and ground water has occurred as a result of disposal of these industrial wastes. The selected remedial action for this site is included.

TITLE Superfund Record of Decision (EPA Region 3): Lehigh Electric Site, Old Forge, Pennsylvania, February 1983 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC

REPORT NUMBER PB85-213825/XAB (NTIS); EPA/ROD/R03-83/005 (EPA)

REPORT DATE 11 Feb 83 39p

NOTE See also PB85-213817 and PB85-213833.
Also available in set of 9 reports, PB85-213775.

ABSTRACT The LeHigh Electric and Engineering Company site is located in Old Forge, Pennsylvania and encompasses approximately 6.4 acres of property adjacent to the Lackawanna River. Since the early 1960's the site has been used by LeHigh Electric as an electrical equipment repair and storage yard. The hazardous conditions at the site were created by indiscriminate handling and disposal of PCBs. The site investigation found that PCBs are concentrated in the surface soil layers from undetectable to 110,000 ppm. The cost-effective remedial action selected for the site includes excavation and off-site disposal of soils with a PCB concentration of 50 ppm or greater; additional soil excavation and removal where cost-effective; demolition of the buildings on-site; backfilling, grading, and vegetating of the site to minimize erosion and to control percolation and run-off. The estimated capital cost for this remedial action is $6,401,000 and monitoring and maintenance costs for the site over a 30-year period is $46,000.

TITLE Superfund Record of Decision (EPA Region 5): Acme Solvents, Morristown, Illinois, September 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB86-133881/XAB (NTIS); EPA/ROD/R05-85/026 (EPA)

REPORT DATE 27 Sep 85 55p

NOTE Portions of this document are not fully legible.

ABSTRACT The Acme Solvents Reclaiming, Inc. facility is located approximately five miles south of Rockford, Illinois. From 1960 until 1973, the facility served as a disposal site for paints, oils and still bottoms from the solvent reclamation plant located in Rockford. In addition, empty drums were stored onsite. Wastes were dumped into depressions created from either previous quarrying activities or by scraping over-burden from the near surface bedrock to form berms. In September 1972, the Illinois Pollution Control Board (IPCB) ordered Acme to remove all drums and wastes from the facility and to backfill the lagoons. Follow-up inspections revealed that wastes and crushed drums were being left onsite and merely covered with soil. Sampling of the site revealed high concentrations of chlorinated organics in the drinking water. The major source of hazardous substances at the facility are the waste disposal mounds. These mounds contain volatile and semi-volatile organic compounds and concentrations of PCBs up to several hundred mg/kg. The selected remedial action is included.

TITLE Superfund Record of Decision (EPA Region 5): A and F Materials, Greenup Site, Illinois (Initial Remedial Measure), November 1983 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB8-213890/XAB(NTIS); EPA/ROD/R05-83/001 (EPA)

REPORT DATE 23 Nov 83 16p

NOTE See also PB85-213908.
Also available in set of 9 reports, PB85-213882.

ABSTRACT The site, a defunct waste solvent reclaiming/processing facility, is located on three and three-quarters acres of land in Greenup, IL, and includes thirteen steel storage tanks containing mixtures of waste oils contaminated with PCBs and organics, sludges, spent caustics, spent acids, contaminated water and waste products. The tanks have a history of failure, creating a significant threat of hazardous substance release. In addition, the site includes four storage lagoons of contaminated sludge and soil which have a history of overflow problems. The site is underlain by ten feet of silty material with a high permeability; beneath this silt layer lies a sand and gravel aquifer which has been contaminated. The site has a pronounced slope toward a river, is in a flood plain, and includes porous soil and high ground water table. The cost-effective Initial Remedial Measure (IRM) selected for this site includes: off-site transportation and disposal of all contaminated bulk liquids, oils and drums at a RCRA-approved facility. Additional actions will include a cooperative agreement to conduct an RI/FS for soils, sludges and ground water contamination, and the preparation of another ROD to address remedial actions necessary to mitigate problems caused by the remaining contaminants. The capital cost of the IRM is estimated to be $111,100.

TITLE Superfund Record of Decision (EPA Region 5): Byron/Johnson Salvage Yard, Byron, Illinois, March 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-232148/XAB (NTIS); EPA/ROD/R05-85/010 (EPA)

REPORT DATE 13 Mar 85 32p

ABSTRACT

The Bryon (Johnson) Salvage Yard site is located 4 miles southwest of Byron, Illinois and consists of 20 acres of woodlands in a rural, agricultural area. The yard operated during the 1960's and early 1970's as a salvage yard and unpermitted landfill. Domestic refuse and industrial drums have been collected and sometimes buried on site. Ten surface water sampling points from nearby Woodland Creek and Rock River, and three ground water sampling points have yielded high concentrations of cyanide and other toxic chemicals including lead, arsenic, halogenated organics and low-level PCB's. The selected remedy for the Byron Salvage Yard consists of off-site disposal of all surface and buried drums, off-site disposal of highly contaminated soils which exhibit the EP toxicity characteristic, and in-situ treatment with sodium hypochlorite and ammonia of all contaminated soil containing greater than 1 ppm cyanide. Off-site disposal would include disposal at a lined, RCRA approved landfill and, if possible, incineration or treatment of liquids. Total estimated cost for the selected remedial alternative is estimated to be $1,170,919 and O&M costs would be an additional $6,000 per year.

TITL. Superfund Record of Decision (EPA Region 5): Berlin and Farro Site, Swartz Creek, Michigan, February 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213916/XAB (NTIS); EPA/ROD/R05-84/003 (EPA)

REPORT DATE 29 Feb 84 34p

NOTE See also PB85-213908 and PB85-213924.
Also available in set of 9 reports PC E99, PB85-213882.

ABSTRACT

The Berlin and Farro Liquid Incineration site occupies 40 acres approximately 3.5 miles south of the City of Swartz Creek, Michigan. A liquid waste incinerator was operated at the site from 1971 until the late 1970's, during which time liquid wastes were incinerated, stored in open lagoons and underground tanks and poured into agricultural drains. Solid wastes, contained primarily in crushed drums, were buried in various on-site locations. The selected alternative to mitigate the uncontrolled hazardous waste problem at the Berlin and Farro site involves four areas. They are: excavation of the existing drum landfill and disposal of sludge, crushed drums, liquid wastes and visibly contaminated soil at a RCRA facility; solids to be landfilled and liquids to be incinerated. Also, excavation of the paint sludge trench and disposal of sludges and visibly contaminated soil at a RCRA facility. Also, excavation of the agricultural drains leaving the site and miscellaneous areas of visible contamination, and disposal of wastes, sludge and visibly contaminated soil at a RCRA facility. Supplemental sampling will be performed to determine if waste has migrated below visibly contaminated areas.

TITLE Superfund Record of Decision (EPA Region 5): Cemetery Dump Site, Oakland County, Michigan, September 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB86-133949/XAB (NTIS); EPA/ROD/R05-85/021 (EPA)

REPORT DATE 11 Sep 85 21p

ABSTRACT The Cemetery Dump Site is located in Oakland County, Michigan, approximately 35 miles northwest of Detroit. The 4 acre site was once used as a sand and gravel pit which has been backfilled and cleared. Citizen reports allege that approximately 300 to 600 barrels were dumped and buried onsite in the late 1960s or early 1970s. In September 1981, the Michigan Department of Natural Resources excavated and transported offsite approximately 20 to 30 barrel fragments. Analysis of the barrel contents indicated the presence of paint sludges, solvents, PCBs and oils. This ROD is a source control remedial action that includes excavation and disposal of approximately 250 drums at an offsite RCRA facility. Total capital cost for the selected remedial action is estimated to be $1,883,261. Any additional remedial actions will be addressed in a separate Record of Decision upon completion of the RI/FS.

TITLE Superfund Record of Decision (EPA Region 5): Laskin Poplar Oil Site, Jefferson, Ohio, August 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213924/XAB (NTIS); EPA/ROD/R05-84/004 (EPA)

REPORT DATE 9 Aug 84 25p

NOTE See also PB85-213916 and PB85-213932.
Also available in set of 9 reports PC E99, PB85-213882.

ABSTRACT The Laskin Poplar Oil site includes several storage tanks and retention ponds of waste oils, on about 9 acres in northeastern Ohio, Ashtabula County. The waste oils contain PCBs, phenols, PAHS, sludges and other organics, and both soils and surface waters have become contaminated. The site has been involved in mudslides and flooding, and runoff and seepage into Cemetery Creek pose the most obvious and immediate threat of environmental contamination. The cost-effective remedial alternative for this site includes: off-site incineration of contaminated water and waste oil above and below 50 ppm PCB, using established technology. The capital cost for the selected alternative was estimated to be $1,043,000; no O&M activities were required for this Final Action.

TITLE Superfund Record of Decision (EPA Region 5): Outboard Marine Corporation Site, Waukegan, Illinois, May 1984 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-213957/XAB (NTIS); EPA/ROD/R05-84/007 (EPA)

REPORT DATE 15 May 84 71p

NOTE See also PB85-213940 and PB85-213965.
Also available in set of 9 reports PC E99, PB85-213882.

ABSTRACT

The Outboard Marine Corporation (OMC) site is located north of Chicago on the shore of Lake Michigan. It is the location of an outboard motor manufacturing plant which used polychlorinated biphenyls (PCBs) in its die cast machines for about 20 years ending in the early 1970's. Discharges from the facility resulted in highly contaminated sediment in Waukgan Harbor and contaminated soil in the parking lot north of the plant and the 'North Ditch,' a tributary of Lake Michigan. The cost-effective option considered for this site was excavation and off-site disposal of PCB-contaminated material. This is the only option that meets the requirements of TSCA and guarantees the halt of PCB migration. The cost of this option is more than $75 million. Because of the high cost to implement this option it was necessary to Fund Balance. Fund Balancing is appropriate where the alternative that would fully satisfy the technical requirements of other environmental laws is extremely expensive, and another alternative which approaches the same level of effectiveness can be implemented for a much lower cost. The Fund Balanced alternative for this site provides for off-site disposal of PCB contaminated hot-spots and on-site containment of the moderately contaminated materials. The cost of the Fund Balanced selected alternative is estimated to be $21.57 million.

TITLE

Superfund Record of Decision (EPA Region 5): Wauconda Sand and Gravel, Wauconda, Illinois, September 1985 (Final rept)

CORPORATE SOURCE

Environmental Protection Agency, Washington, DC.

REPORT NUMBER

PB86-133873/XAB (NTIS); EPA/ROD/R05-85/027 (EPA)

REPORT DATE

30 Sep 85 49p

ABSTRACT

The Wauconda Sand and Gravel Landfill site is located in Lake County, Illinois, approximately two miles north of the Village of Wauconda. The 74-acre site is comprised of a 43-acre unpermitted landfill, a nine-acre permitted landfill, nine acres which are excavated but unfilled, and 13 acres of perimeter site area. Before 1950, the site property was used as a sand and gravel pit. From 1950 until 1977, Wauconda Sand and Gravel Company operated the northern portion (43 acres unpermitted fill) of the site as a landfill. Landfill operations during this period consisted of dumping refuse into the mined-out gravel pit. The refuse deposited at the landfill consisted of residential garbage, construction debris, some industrial sludges and drums with undetermined contents. In 1980, a private well adjacent to the eastern boundary of the landfill was sampled by Illinois Environmental Protection Agency and inorganic, organic and PCB contamination was detected. Additional investigations concluded that PCBs, metals, and organics were contaminating the ground water and surface water (Mutton Creek).

TITLE Superfund Record of Decision (EPA Region 6): MOTCO, La Marque, Texas, March 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-229086/XAB (NTIS); EPA/ROD/R06-85/005 (EPA)

REPORT DATE 15 Mar 85 56p

ABSTRACT The MOTCO site is located about two miles southeast of the City of LaMarque, TX and occupies approximately 11.3 acres near the junction of State Highway 3 and the Gulf Freeway. The site has been used for recycling styrene tars and disposal of industrial chemical wastes. Due to numerous complaints, the City of LaMarque passed an ordinance prohibiting disposal of liquid wastes in surface impoundments which forced the owners to close the site. Subsequent owners attempted to recycle the wastes in the lagoons but later abandoned the project. The cost-effective remedial alternative selected for this site involves transport of surface water in the impoundments by pipeline to an industrial wastewater treatment plant, the incineration of PCB liquid organics at the TSCA permitted facility, the incineration of non-PCB liquid organics at the RCRA permitted or interim status facility, and off-site disposal of the tars/sludges and soils at a RCRA (double-lined) facility. The estimated total cost for this alternative is $42,300,000.

TITLE Superfund Record of Decision (EPA Region 9): Jibboom Junkyard, Sacramento, California, May 1985 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-229094/XAB (NTIS); EPA/ROD/R09-85/008 (EPA)

REPORT DATE 9 May 85 59p

ABSTRACT The Jibboom Junkyard site is located on the east bank of the Sacramento River, approximately 6,000 feet from the State Capital Building. The nine acre site is the former location of the Associated Metals Company salvage yard. Today, a majority of the site, 6.7 acres, is covered by Interstate 5 and the adjacent Jibboom Street. The property was used for a metal salvage operation until 1965. All grades of metal were salvaged, including railroad cars, army tanks, batteries, and some transformers. Results of the seven EPA and DOHS sampling efforts indicate that there is extensive lead, zinc, and copper contamination onsite. Most of the contamination is limited to the top one foot of soil, and no offsite contamination has been detected. Subsurface contamination above background levels was only detected at four locations. The selected remedy for the Jibboom Junkyard consists of excavation and removal of contaminated soils to a RCRA-approved offsite, Class 1, hazardous waste disposal facility. The total capital cost of the selected remedial alternative is estimated to be $1,460,000.

TITLE Superfund Record of Decision (EPA Region 9): Taputimu Farm/Insular Territories Site, American Samoa, Decemember 1983 (Final rept)

CORPORATE SOURCE Environmental Protection Agency, Washington, DC.

REPORT NUMBER PB85-214146/XAB (NTIS); EPA/ROD/R09-83/006 (EPA)

REPORT DATE 27 Dec 83 11p

NOTE See also PB85-214138 and PB85-214153.
Also available in set of 7 reports, PB85-214088.

ABSTRACT The Taputimu Farm is a facility owned by the government of American Samoa and is the territory's primary repository of unused and out-dated agricultural chemicals and pesticides. The facility is constructed of plywood walls with a corrugated metal roof and is located approximately a quarter mile from a public beach. The remedial action alternative selected for this site involves repacking or overpacking the chemical/pesticide materials stored at the Taputimu Farm, decontaminating the storage facilities and sealing the decontaminated surfaces, and transporting all the waste materials to the U.S. mainland for disposal. The cost of this remedial action is estimated to be $160,000.

TITLE Support Document/Voluntary Environmental Impact Statement for Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Ban Regulation: Economic Impact Analysis (Final rept.)

AUTHOR Westin, Robert ; Woodcock, Bruce

PERFORMING ORGANIZATION Versar, Inc., Springfield, VA.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB82-178500 (NTIS); EPA/560/3-82-001 (EPA)
EPA-68-01-4771 (EPA Contract Number)

REPORT DATE 30 Mar 79 315p

ABSTRACT This report summarizes the estimated economic impacts of PCB Ban Regulations which implement the requirements of Sections 6(e)(2) and 6(e)(3) of the Toxic Substances Control Act.

TITLE Synthesis of the Octa- and Nonachlorobiphenyl Isomers and Congeners and their Quantitation in Commercial Polychlorinated Biphenyls and Identification in Human Breast Milk (Journal article)

AUTHOR Mullin, M. ; Sawka, G. ; Safe, L. ; McCrindle, S. ; Safe, S.

CORPORATE SOURCE Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

REPORT NUMBER PB82-238981 (NTIS); EPA-600/J-81-551 (EPA)

REPORT DATE May 82 7p

NOTE Prepared in cooperation with Guelph Univ. (Ontario).

ABSTRACT The synthesis of all possible isomeric nona- and octachlorobiphenyls has been accomplished by the Cadogan coupling of commercially available or synthetic chlorinated anilines in the presence of excess chlorinated benzenes and isoamyl nitrite. 2,3,4,6-Tetrachloroaniline was prepared by the chlorination of 2,4,5-trichloroaniline. The synthetic polychlorinated biphenyls (PCBs) were characterized by their proton magnetic resonance and mass spectra and their purities determined by gas chromatographic analyses. The PCB standards were used to unambiguously identify the deca-, nona-, and octachlorobiphenyls present in human breast milk and in the commercial PCB preparations Aroclors 1268, 1262, 1260, 1254, 1248, 1242, 1016, 1232 and 1221 utilizing high resolution glass capillary gas chromatography.

TITLE Systems Reliability and Performance: Pilot-Scale Incineration of Chlorinated Benzenes at the Combustion Research Facility (Rept. for Aug 83-Jan 84)

AUTHOR Whitmore, F. C. ; Ross, Jr., R. W. ; Durfee, R. L. ; Fowler, C. F. ; Sargent, D. H.

PERFORMING ORGANIZATION Versar, Inc., Pine Bluff, AR. Southern Operations.

SPONSOR Industrial Environmental Research Lab.-Cincinnati, OH.

REPORT NUMBER PB85-121184/XAB (NTIS); EPA/600/2-84/174 (EPA)
EPA-68-03-2128 (EPA Contract Number)

REPORT DATE Oct 84 240p

ABSTRACT A series of 34 test burns was conducted between August 1983 and January 1984 in the pilot-scale rotary kiln incineration system at the USEPA Combustion Research Facility (CRF), using chlorinated benzenes as surrogate Principal Organic Hazardous Components (POHCs), over a range of feed compositions, POHC feed rates, rotary kiln temperatures, and afterburner temperatures. The CRF rotary kiln system consistently produced Destruction and Removal Efficiency (DRE) values above 99.99% for the chlorinated benzenes POHCs. DRE values below 99.99% were obtained during several types of failure mode simulations (flame-out in kiln or afterburner). A large number of Products of Incomplete Combustion (PICs) were produced and identified, a number of which are toxic or possibly carcinogenic. Deliberate reduction of excess air levels resulted in significant production of soot and PICs but did not produce higher levels of CO in the combustion gases. Hot-zone sampling just downstream of each of the two combustion chambers provided for the detailed study of PIC formation and will facilitate the future development of models of the incineration process. Helium injection techniques were used to determine combustion gas flow rates and to measure residence time distributions (which directly affect destruction efficiencies). This report was submitted in fulfillment of Contract 68-03-3128 by Versar, Inc. under the Sponsorship of the U.S. Environmental Protection Agency.

TITLE Technical Assistance in Support of Permitting Activities for the Thermal Destruction of PCBs (Final rept.)

AUTHOR McInnes, Robert G.

PERFORMING ORGANIZATION GCA Corp., Bedford, MA. GCA Technology Div.

SPONSOR Industrial Environmental Research Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-231325 (NTIS); EPA-600/2-81-240 (EPA)
EPA-68-02-3168 (EPA Contract Number)

REPORT DATE Oct 81 78p

ABSTRACT The report describes phased efforts to identify, evaluate, and provide technical permitting assistance to utility boilers considering thermally destroying PCB-contaminated mineral oil. The project also required that State and Local Governments be provided information needed to aid permitting of a PCB verification burn.

TITLE The Determination of Organohalide Pesticides and PCBs in Industrial and Municipal Wastewater: Method 617 (Final rept.)

AUTHOR Pressley, Thomas A ; Longbottom, James E.

CORPORATE SOURCE Environmental Monitoring and Support Lab.-Cincinnati, OH.

REPORT NUMBER PB82-156001 (NTIS); EPA-600/4-82-006 (EPA)

REPORT DATE Jan 82 35p

ABSTRACT This is a gas chromatographic (GC) method applicable to the determination of selected pesticides in municipal and industrial discharges as provided under 40CFR 136.1. A sample is solvent extracted with 15% methylene chloride in hexane using a separatory funnel. The extract is concentrated, then analyzed by GC with an electron capture detector. A total of 29 pesticides and 7 PCBs are included in the method scope.

TITLE The Ecological Impact of Synthetic Organic Compounds on Estuarine Ecosystems

AUTHOR Lincer, Jeffrey L., ; Haynes, Marieta E. ; Klein, Marian L.

PERFORMING ORGANIZATION Mote Marine Lab., Sarasota, Fla.

SPONSOR Environmental Research Lab., Gulf Breeze, Fla.

REPORT NUMBER PB-259 943/9 (NTIS); EPA/600/3-76/075 (EPA)
EPA-ROAP-10AKC-043 (EPA Contract Number)

REPORT DATE Sep 76 364p

NOTE Bibliography

ABSTRACT The review and indexed bibliography concerns the presence and effects of pesticides (i.e., insecticides, herbicides, fungicides, etc.) and industrial toxicants in the estuarine ecosystem. The industrial toxicants refer, primarily, to polychlorinated biphenyls, but phthalate esters, polychlorinated terphenyls, chlorinated dibenzodioxins and dibenzofurans are also discussed. The review covers literature of the last decade, with emphasis on the most recent 5 years. However, the 700-plus references in the bibliography span a much wider range. A permuted keyword retrieval system (SPINDEX) is provided to allow practical use of the bibliography by scientists, academicians, and societal decision makers.

TITLE The Effect of Polychlorinated Biphenyls on Rat Reproduction

AUTHOR Linder, R. E. ; Gaines, T. B. ; Kimbrough, R. D.

CORPORATE SOURCE Environmental Protection Agency, Chamblee, Ga. Chamblee Toxicology Lab.

REPORT NUMBER PB-279 186/1 (NTIS)

REPORT DATE 15 Aug 73 16p

NOTE Pub. in Fd Cosmet. Toxicol., v12 p63-77 1974.
Included in the report, Journal Articles on Toxicology. Group 5, PB-279 175. Order as PB-279 175 from NTIS.

ABSTRACT

The present investigation was initiated in 1970 to study the effects on reproduction and pathology produced by two American-made PCB mixtures sold under the trade-names Aroclor 1254 and Aroclor 1260. Aroclor 1254 contains 54% (w/w) chlorine and is composed of 11% tetra-, 49% penta-, 34% hexa- and 6% heptachlorobiphenyls; Aroclor 1260 has 60% (w/w) chlorine, with a composition of 12% penta-, 38% hexa-, 41% septa-, 8% octa- and 1% nonochlorobiphenyls. The present communication is an account of reproduction studies in rats. Also included are acute toxicity values from preliminary studies and comments on pathology and haematology in animals from the reproduction experiments.

TITLE

The Response of Rainbow Trout 'Salmo gairdneri' to 'Aeromonas hydrophila After Sublethal Exposures to PCB and Copper
(Journal article)

AUTHOR

Snarski, Virginia M.

CORPORATE SOURCE

Environmental Research Lab.-Duluth, MN.

REPORT NUMBER

PB83-131136 (NTIS); EPA-600/J-82-241 (EPA)

REPORT DATE

1982 16p

NOTE

Pub. in Environmental Pollution Series A 28, p219-232 1982.

ABSTRACT

Rainbow trout were continuously exposed to sublethal PCB concentrations for 30 days and infected with Aeromonas hydrophila or sham-injected. Mortality of PCB-exposed infected fish was significantly lower than control-infected fish. Survivors of the infection at all exposure concentrations had elevated leucocrits and decreased haematocrits compared with their respective shams. PCB-exposed sham fish had significantly higher leucocrits at both concentrations and significantly lower haematocrits compared with control-shams.

TITLE The Toxicity of Polychlorinated Polycyclic Compounds and Related Chemicals

AUTHOR Kimbrough, Renate D.

PERFORMING ORGANIZATION Center for Disease Control, Atlanta, Ga.

REPORT DATE 1974 54p

NOTE Pub. in the Toxicity of Polychlorinated Polycyclic Compounds and Related Chemicals, Critical Reviews Toxicology, v2 p445-498 1974.
Included in the report, Journal Articles on Toxicology. Group 4, PB-279 272. Order as PB-279 272 from NTIS.

ABSTRACT The present review is an attempt to correlate various toxic effects produced by the chemicals in order to better understand and appreciate their behavior. The subjects covered in this article have lately enjoyed great interest and a rapidly growing number of scientific reports are available. Since a number of the chemicals discussed produce similar or related effects, their toxicology is discussed together rather than listing each compound separately, which would have led to a great deal of repetition. A detailed discussion of the various chemical reactions, analytical methods for the determination of the compounds, is not given. The review has been written with the toxic effects of the various compounds as the focal point and the literature cited serves to illustrate these points. No attempt has been made to present a complete review of the literature in this area.

TITLE Thermal Degradation Products from Dielectric Fluids (Interim rept. no. 1)

AUTHOR Erickson, M. D. ; Cole, C. J. ; Flora, J. D. ; Gorman, P. G. ; Haile, C. L.

PERFORMING ORGANIZATION Midwest Research Inst., Kansas City, MO.

SPONSOR Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER PB85-138535/XAB (NTIS); EPA/560/5-84/009 (EPA)
EPA-68-02-3938 (EPA Contract Number)

REPORT DATE 19 Nov 84 100p

ABSTRACT

Electrical transformer fires can cause extensive smoke damage, especially when polychlorinated biphenyls (PCBs) are involved since they can form polychlorinated dibenzofurans (PCDFs) and other toxic by-products. To characterize the potential for by-product formation, this study was undertaken to optimize conditions for PCDF formation from PCBs and to study the potential for formation of PCDFs and polychlorinated dibenzodioxins (PCDDs) from combustion of selected dielectric fluids, including those contaminated with PCBs. A bench-scale thermal destruction system was used to combust the samples. The dielectric fluid was fed continuously using a syringe pump. The concentrations of CO, CO2, and O2 in the effluent were monitored continuously. The entire effluent from the thermal destruction system was passed through an XAD-2 trap to collect PCDFs and other semivolatile organics. The XAD-2 trap and a rinse of connective tubing were Soxhlet extracted. Extracts were cleaned using column chromatography to isolate the PCDFs and PCDDs. All samples were analyzed for PCDFs using HRGC/EIMS in the selected ion monitoring mode. The results of this work indicate that the optimum conditions for PCDF formation from PCBs are near 675C for 0.8 s or longer, with 8% excess oxygen. Under these conditions, percent levels of PCDFs are formed from mineral oil or silicone oil contaminated with PCBs at 5ppm or greater. PcDFs and PCDDs are also formed from a trichlorobenzene dielectric fluid which contained no detectable PCBs.

TITLE Thermally Modulated Electron Affinity Detector for Priority Pollutant Analysis (Final rept.)

AUTHOR Hanisch, R. C. ; Ogle, L. D. ; Jones, A. E. ; Hall, R. C.

PERFORMING ORGANIZATION Radian Corp., Austin, TX.

SPONSOR Environmental Monitoring and Support Lab.- Cincinnati, OH.

REPORT NUMBER PB85-158145/XAB (NTIS); EPA/600/4-85/009 (EPA)
EPA-68-03-2965 (EPA Contract Number)

REPORT DATE Jan 85 57p

ABSTRACT

In the area of environmental monitoring, a need exists for a rapid, sensitive, and selective method to analyze for chlorinated organic compounds such as pesticides, PCB, PCDD, and PCDF at trace levels in complex samples. In response to this need, a program was conducted to determine the feasibility of using a new detector concept in the gas chromatographic analysis of certain priority pollutants. The concept is based on the thermal alteration of a compound's electron affinity in a flow-through reactor, which can be used to modify the selectivity and sensitivity of the ECD to certain compounds. The TM ECD consists of two ECDs connected by a temperature-controlled reactor. Different classes of organic compounds respond to the reactor conditions in different ways: some compounds exhibit an enhanced ECD response after passing through the reactor; others a diminished signal; and still others no change in the magnitude of the signal. The ratio of a compound's response from the post-reactor ECD to that obtained from the prereactor ECD appears to be a property characteristic of each compound. This peak area ratio can be used in conjunction with its retention time to increase the confidence level of the identity of a given compound while still taking advantage of the excellent sensitivity characteristics of the ECD.

TITLE

Toxicity of Polychlorinated Biphenyls (PCB's) to Fish and Other Aquatic Life

AUTHOR

Nebeker, Alan V. ; Puglisi, Frank A. ; DeFoe, David L.

PERFORMING ORGANIZATION

Environmental Research Lab.-Duluth, Minn.

SPONSOR

Corvallis Environmental Research Lab., Oreg. Western Fish Toxicology Station.

REPORT NUMBER

PB-264 804/6 (NTIS); EPA/600/3-77/034 (EPA)

REPORT DATE

Mar 77 84p

NOTE

Prepared in cooperation with Corvallis Environmental Research Lab., Oreg. Western Fish Toxicology Station.

ABSTRACT

Polychlorinated biphenyls (PCB's) have been shown to be widespread in the environment. Their significance in the aquatic environment as a poison is now being revealed. They are being detected in fish and other aquatic life at levels much higher than concentrations found in the water. The acute toxicity of some of the many types of PCB's produced commercially has been demonstrated for a few species of fish, and fish food organisms, such as shrimp, scuds, and aquatic insects; however, little information is

currently available on the chronic effects of PCB on the full life cycles of aquatic animals. In order to assess the danger of these compounds to fish and fish food organisms the laboratory designed and conducted bioassays using Daphnia magna, the fathead minnow Pimephales promelas, the flagfish Jordanella floridae, the scud Gammarus pseudolimnaeus, and the midge Tanytarsus dissimilis, using commercially available PCB mixtures (Aroclor 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268).

TITLE Toxicity of the Polychlorinated Biphenyl Aroclor 1016 to Mink

AUTHOR Aulerich, R. J. ; Ringer, R. K.

PERFORMING ORGANIZATION Michigan State Univ., East Lansing.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB80-168537 (NTIS); EPA-600/3-80-033 (EPA)
EPA-68-03-1187 (EPA Contract Number)

REPORT DATE Feb 80 34p

ABSTRACT Effects of the PCB Aroclor 1016 on reproduction, growth, and survival of mink (Mustela vison) were investigated. Mink raised according to commercial mink-ranch procedures were fed diets that contained 0, 2, 10, and 25 ppm Aroclor 1016 for up to 18 months. Reproduction was not adversely affected, although kit growth and survival were suboptimum in some of the treated groups. No hematologic differences were observed between the treated and non-treated mink, but heart weight increased and kidney weight decreased in the older animals of two of the three PCB-treated groups. No consistent gross lesions associated with PCB toxicity were observed. The PCB residue in mink tissues was directly related to the quantity of Aroclor 1016 in the diet. Residues in mink kits suggest that Aroclor 1016 passes the placental barrier.

TITLE Toxicological Assessment of Hexachlorobiphenyl Isomers and 2,3,7,8-Tetrachlorodibenzofuran in Chicks. II. Effects on Drug Metabolism and Porphyrin Accumulation

AUTHOR Goldstein, Joyce A. ; McKinney, James D. ; Lucier, George W. ; Hickman, Patricia ; Bergman, Hinda

PERFORMING ORGANIZATION National Inst. of Environmental Health Sciences, Research Triangle Park, N.C.

REPORT DATE 6 Nov 75 12p

NOTE Pub. in Toxicology and Applied Pharmacology 36, p81-92 1976.
Included in the report, Journal Articles on Toxicology. Group 11, PB-280 001.

ABSTRACT The study was undertaken to compare effects of several hexachlorobiphenyl isomers on a number of parameters of hepatic function in the chick, including induction of hepatic drug-metabolizing enzymes and precipitation of hepatic porphyria. These effects were compared with those of TCDF.

TITLE Toxicological Assessment of Hexachloroniphenyl Isomers and 2,3,7,8-Tetrachlorodibenzofuran in Chicks. II. Effects on Drug Metabolism and Porphyrin Accumulation

AUTHOR Goldstein, Joyce A. ; McKinney, James D. ; Lucier, George W. ; Hickman, Patricia ; Bergman, Hinda

PERFORMING ORGANIZATION National Environmental Research Center, Research Triangle Park, N. C.

SPONSOR National Inst. of Environmental Health Sciences, Research Triangle Park, N.C.

REPORT DATE 6 Nov 75 12p

NOTE Pub. in Toxicology and Applied Pharmacology 36, p81-92 1976. Prepared in cooperation with National Inst. of Environmental Health Sciences, Research Triangle Park, N.C.
Included in the report, Journal Articles on Toxicology. Group 5, PB-279 175. Order as PB-279 175 from NTIS.

ABSTRACT Pure hexachlorobiphenyl (HCB) isomers induce a number of changes in parameters of drug metabolism in the chick including changes in cytochrome P-450, liver weight, and p-nitrophenol glucuronyl transferase, but not in testosterone glucuronyl transferase activity. The most active inducers of drug metabolism were 2,3,4,2',3',4'-HCB and 2,4,6,2',4',6'-HCB, while 2,4,5,2',4',5'-HCB produced intermediate effects and 2,3,6,2'.3',6'-HCB was

a poor inducer. All HCBs caused uroporphyrin accumulation and increased delta-aminolevulinic acid (ALA) synthetase activity, but only 3,4,5,3',4',5'-HCB, 2,3,4,2',3',4'-HCB, and 2,4,5,2',4',5'-HCB produced gross accumulation of hepatic porphyrins. Tissue HCB concentrations correlated well with hepatic effecs. 2,3,7,8,-Tetrachlorodibenzofuran (TCDF), a contaminant of commercial polychlorinated biphenyl (PCB) mixtures, had no effects on hepatic ALA synthetase activity, porphyrin accumulation, or glucuronyl transferase. TCDF did produce a slight increase in cytochrome P-450, but the increase was smaller than that produced by HCBs.

TITLE Treatment and Stabilization of Polychlorinated Biphenyls (PCBs) Contaminated Water and Waste Oil. A Case Study. Whitehouse, Florida (Technical rept. Jun 76-Jun 77)

AUTHOR Wilkerson, Raymond T. ; Stroud, Fred B. ; Smith, Al

CORPORATE SOURCE Environmental Protection Agency, Atlanta, Ga. Region IV.

REPORT NUMBER PB-273 842/5 (NTIS)

REPORT DATE Jul 77 35p

ABSTRACT A study was made concerning one method of treating a substantial Environmental Emergency and potential health hazard. The U.S. EPA, the City of Jacksonville, FL and the U.S. Coast Guard formulates an inexpensive treatment system that allows the discharge of a mixture of oil, PCB and water harmlessly into the St. Johns River. The emergency stems from the poor structural integrity of the impoundment dikes.

TITLE Treatment Effectiveness for the Removal of Selected Contaminants from Drinking Water (Final rept.)

AUTHOR Stone, Ralph ; Smallwood, H. A. ; Marsh, J. Rodney

PERFORMING ORGANIZATION Stone (Ralph) and Co., Inc., Los Angeles, Calif.

SPONSOR Environmental Protection Agency, Washington, D.C. Div. of Water Supply.

REPORT DATE Jul 75 199p

REPORT NUMBER PB-258 271/6 (NTIS);
EPA-68-01-2692 (EPA Contract Number)

ABSTRACT

An extensive literature survey was conducted to determine treatment methods for removing antimony, beryllium, cobalt, lithium, molybdenum, nickel, tungsten, vanadium, bisethers, polychlorinated biphenyls, chlorinated hydrocarbon insecticides, and organophosphorus insecticides from drinking water. The processes discussed included ion exchange, reverse osmosis, electrodialysis, distillation, coagulation/precipitation, chemical oxidation, radio-chemical degradation, and adsorption. Treatment efficiencies were determined in terms of influent and effluent concentrations for each applicable treatment method. Process designs, constraints and limitations, operating conditions, and costs were presented for each treatment process discussed. Each process was evaluated as to its availability, applicability, and technical and economic feasibility. The best available and best technically feasible treatment processes were presented for each contaminant.

TITLE Treatment of Contaminated Soils with Aqueous Surfactants (Interim rept. May 82-Aug 85)

AUTHOR Ellis, W. D. ; Payne, J. R. ; McNabb, G. D.

PERFORMING ORGANIZATION Science Applications International Corp., McLean, VA.

SPONSOR Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.

REPORT NUMBER PB86-122561/XAB (NTIS); EPA/600/2-85/129 (EPA)
EPA-68-03-3113 (EPA Contract Number)

REPORT DATE Nov 85 96p

NOTE Sponsored by Environmental Protection Agency, Cincinnati, OH. Hazardous Waste Engineering Research Lab.

ABSTRACT

The overall objective of the project was to develop a technical base for decisions on the use of chemical countermeasures at releases of hazardous substances. Work included a literature search to determine the nature and quantities of contaminants at Superfund sites and the applicability of existing technology to in situ treatment of contaminated soils. Laboratory studies were conducted to develop an improved in situ treatment methodology and were designed to determine whether significant enhancement to the efficiency of water washing could be obtained by adding aqueous surfactants to recharge water used in a continuous recycle. The use of aqueous nonionic surfactants for cleaning soil spiked with PCBs, petroleum hydrocarbons, and

chlorophenol was developed through shaker table and soil column tests. Based upon project results, the aqueous surfactant countermeasure is potentially useful for in situ cleanup of hydrophobic and slightly hydrophilic organic contaminants in soil, and should be further developed on a larger scale at a small contaminated site under carefully controlled conditions. However, reuse of the surfactant is essential for cost-effective field application. Accordingly, any future work should investigate the use of other surfactants that may be more amenable to separation.

TITLE Treatment of Hazardous Waste. Proceedings of the Annual Research Symposium (6th) Held at Chicago, Illinois on March 17-20, 1980 (Final rept. Oct 79-Sep 80)

AUTHOR Shultz, David ; Black, David

PERFORMING ORGANIZATION Southwest Research Inst., San Antonio, TX.

SPONSOR Municipal Environmental Research Lab., Cincinnati, OH.

REPORT NUMBER PB80-175094 (NTIS); EPA-600/9-80-011 (EPA)

REPORT DATE Mar 80 183p

NOTE See also report dated Mar 80, PB80-175086.

ABSTRACT These proceedings are a compilation of the papers presented by symposium speakers. They are divided into two volumes representing the technologies of Treatment and Disposal. The primary technical areas covered in this volume are: Waste Sampling and Characteristics; Waste Treatment and Control; Pesticide Treatment and Control; Thermal Destruction Techniques; Economics.

TITLE Ultrastructure of Thyroid Gland in Rats Receiving PCBs

AUTHOR Wassermann, Dora ; Wassermann, M.

PERFORMING ORGANIZATION Hadassah Medical School, Jerusalem (Israel). Dept. of Occupational Health.

REPORT DATE 1977 1p

NOTE Pub. in unidentified Jnl.

NOTE Included in the report, Journal Articles on Toxicology, Group 14, PB-280 889. Order as PB-280 889 from NTIS.

ABSTRACT The paper reports structural changes in the thyroid gland of rats receiving PCBs. White, local strain, male rats, 4 and 6 weeks old, received 200 and 250 ppm PCBs-1221 in their drinking water for 6 and 10 weeks, respectively. The mean level of PCBs in the adipose tissue of rats receiving 250 ppm PCBs-1221 for 2 1/2 months was 6.8 ppm.

TITLE Uptake, Metabolism, and Disposition of Xenobiotic Chemicals in Fish. Wisconsin Power Plant Impact Study

AUTHOR Lech, John ; Melancon, Mark

PERFORMING ORGANIZATION Medical Coll. of Wisconsin, Inc., Milwaukee.

SPONSOR Environmental Research Lab.-Duluth, MN.

REPORT NUMBER PB81-135329 (NTIS); EPA-600/3-80-082 (EPA)
EPA-R-803971 (EPA Contract Number)

REPORT DATE Aug 80 157p

NOTE Prepared in cooperation with Madison Gas and Electric Co., Wisconsin, Wisconsin Public Service Corp., Green Bay, Wisconsin Public Service Commission, Madison, and Wisconsin Dept. of Natural Resources, Madison.

ABSTRACT The effects and fate in fish of a number of chemicals, including hydrocarbons and chlorinated hydrocarbons, have been examined. The interactions between these chemicals and fish have been studied using several approaches. The uptake an elimination of 14C-labeled napthalene, 2-methylnapthalene, 1,2,4-trichlorobenzene, pentachlorophenol, and pentachloroanisole were studied. Each of these chemicals was taken up rapidly by rainbow trout. Increasing the duration of exposure to 14C-napthalene or 14C-2-methylnapthalene affected the elimination of 14C-containing components from these fish. Activities of cytochrome P-450-related xenobiotic metabolizing enzymes in rainbow trout livers were induced. The quantities of biliary metabolites in these fish were considerably higher than those found in non-induced trout. Piperonyl butoxide reduced levels of biliary metabolites of pentachloranisole and di-2-ethylhexyl-phthalate in trout and increased tissue levels of these chemicals. The high levels of biotransformation products of these chemicals found in fish bile during and after exposure to the chemicals in these studies support the possible use of bile sampling in pollutant-modelling programs.

TITLE Validation of a Method to Measure Polychlorinated Biphenyls in Natural Gas Pipelines (Final rept.)

AUTHOR Harris, Robert W. ; Grainger, C. Fred ; Mitchell, William J.

PERFORMING Grainger Labs., Inc., Raleigh, NC.

SPONSOR Environmental Monitoring Systems Lab., Research Triangle Park, NC.

REPORT NUMBER PB82-207556 (NTIS); EPA-600/4-81-048 (EPA)
EPA-68-02-3431 (EPA Contract Number)

REPORT DATE Jun 81 40p

ABSTRACT NIOSH-approved, commercially-available Florisil tubes were found to quantitatively collect PCB from natural gas streams when the sampling rate is less than 600 cc/min and less than 230 liters of gas is collected. It was also found that severe skewing of the Aroclor pattern can result when gas passes through a PCB contaminated pipe. When this occurs the pattern recognition approach used for quantifying PCB in air samples will be inadequate. In this situation confirmation of PCB should be done using a second GC column and, if PCB's are confirmed, the Webb-McCall or perchlorination procedures should be utilized for sample quantitation.

TITLE Vapor Exchange of PCBs with Lake Michigan: The Atmosphere as a Sink for PCBs

AUTHOR Murphy, Thomas J. ; Pokojowczyk, Jean C. ; Mullin, Michael D.

PERFORMING ORGANIZAATION Environmental Research Lab.-Duluth, Grosse Ile, MI. Large Lakes Research Station.

SPONSOR DePaul Univ., Chicago, IL.

REPORT NUMBER PB83-250316 (NTIS); EPA-600/D-83-097

REPORT DATE Aug 83 14p

NOTE Prepared in cooperation with DePaul Univ., Chicago, IL.

ABSTRACT

In this paper, preliminary results of the application of an equilibrium method for determining the Henry's Law Constants (HLCs) for all the individual chlorobiphenyl compounds in the Aroclor mixtures are reported. Most of the individual compounds in Aroclor 1242 and 1254 have HLCs in the range of 2 to .0007 a+m/cu m/mol. A method is also described which permits the fugacity of the PCBs in natural waters to be determined. Preliminary results of this method with Lake Michigan water indicates that about 60% of the PCBs in the water samples tested were in true solution.

TITLE

Verification of PCB (Polychlorinated Biphenyl) Spill Cleanup by Sampling and Analysis
(Interim rept. no 2)

AUTHOR

Boomer, B. A. ; Erickson, M. D. ; Swanson, S. E. ; Cox, D. C. ; Schultz, B. D.

PERFORMING ORGANIZATION

Midwest Research Inst., Kansas City, MO.

SPONSOR

Washington Consulting Group, DC.; Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

REPORT NUMBER

PB86-107315/XAB (NTIS); EPA/560/5-85/026 (EPA)
EPA-68-02-3938 (EPA Contract Number)

REPORT DATE

Aug 85 76p

NOTE

Prepared in cooperation with Washington Consulting Group, DC. Sponsored by Environmental Protection Agency, Washington, DC. Office of Toxic Substances.

ABSTRACT

The report, intended primarily for EPA enforcement personnel, outlines specific sampling and analysis methods to determine compliance with EPA policy on the cleanup of PCB spills. The sampling and analysis methods can be used to determine the residual levels of PCBs at a spill site following the completion of cleanup activities. Although the methodologies outlined in this document are applicable to PCB spills in general, specific incidents may require special efforts beyond the scope of this report. A sampling design is proposed for use by EPA enforcement staff in detecting residual PCB contamination above a designated limit after a spill site has been cleaned. The proposed design involves sampling on a hexagonal grid which is centered on the cleanup area and extends just beyond its boundaries. Quality assurance (QA) must be applied throughout the entire monitoring program. Quality control (QC) measures, including protocls, certification and performance checks, procedural QC, sample QC, and sample custody as appropriate, should be stipulated in a QA plan.

TITLE

WASTOX (Water Quality Analysis Simulation for Toxics), a Framework for Modeling the Fate of Toxic Chemicals in Aquatic Environments. Part 2. Food Chain

AUTHOR

Connolly, J. P. ; Thomann, R. V.

PERFORMING ORGANIZATION

Manhattan Coll., Bronx, NY. Dept. of Environmental Engineering and Science.

SPONSOR

Environmental Research Lab., Gulf Breeze, FL.

REPORT NUMBER

PB85-214435 (NTIS); EPA/600/4-85/040 (EPA)

REPORT DATE

Jun 85 63p

NOTE

See also PB85-152882.

ABSTRACT

A food chain bioaccumulation mathematical framework was developed as part of a broader framework for modeling the fate of toxic chemicals in natural water systems, entitled WASTOX. A user's guide for WASTOX (PB85-152882) was published in August 1984. The food chain component of WASTOX described here is a generalized model for estimating the uptake and elimination of toxic chemicals by aquatic organisms. Uptake and elimination rates are related to the bioenergetic parameters of the species encompassed in either a linear food chain or a food web. Concentrations are calculated as a function of time and age for each species included. Exposure to the toxic chemical in food is based on a consumption rate and predator-prey relationships that are specified as a function of age. Exposure to the toxic chemical in water is functionally related to the respiration rate. Steady-state concentrations may also be calculated. Food chain exposure to chemicals may be specified by the user of the model or may be taken directly from the values calculated by the exposure concentration component of WASTOX. Migratory species, as well as nonmigratory species, may be considered. The model has been successfully used to model Kepone in the James River striped bass food chain and PCBs in the Lake Michigan lake trout food chain and the Saginaw Bay, Lake Huron yellow perch food.

TITLE	Water-Related Environmental Fate of 129 Priority Pollutants. Volume I: Introduction and Technical Background, Metals and Inorganics, Pesticides and PCBs (Final rept.)
AUTHOR	Callahan, Michael A. ; Slimak, Michael W. ; Gabel, Norman W. ; May, Ira P. ; Fowler, Charles F.
PERFORMING ORGANIZATION	Versar, Inc., Springfield, VA.
SPONSOR	Environmental Protection Agency, Washington, DC. Office of Water Planning and Standards.
REPORT NUMBER	PB80-204373 (NTIS); EPA-440/4-79-029A (EPA) EPA-68-01-3852 (EPA Contract Numer)
REPORT DATE	Dec 79 487p
NOTE	Sponsored in part by Grant EPA-68-01-3867. Prepared in cooperation with SRI International, Menlo Park, CA. See also Volume 2, PB80-204381.

ABSTRACT

This report is a literature search and summary of relevant data for the individual fate processes (hydrolysis, biodegradation, photolysis, etc.) which might be expected to occur if a pollutant were introduced into an aquatic system. The report is organized into 101 individual chapters for pollutants or small groups of pollutants, and four introductory chapters. Each chapter has its own references so the chapters can be used independently. The approach taken by this report is to summarize data on the individual processes which might be important in describing the transport and fate of pollutants introduced at low concentrations (e.g., ppm or less) into aquatic environments. If transport processes will result in significant pollutant transfer to another medium (e.g., air, sediments), data are included where available to describe what happens to the pollutant in the medium to which the pollutant was transferred. A list of the literature covered in the search is included. Results of the literature search are that a significant amount of information on most pollutants was found, but that the information was more useful in making qualitative judgements about the pollutant transport and fate than for making quantitative predictions of concentrations in the environment. Availability of rate constants useful in mathematical fate models was limited.

EPA REPORTS FROM THE GOVERNMENT PRINTING OFFICE (GPO) DATABASE

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The references listed in this section may be purchased from:

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TITLE	An age-dependent model of PCB in a Lake Michigan food chain
AUTHORS	Thomann, Robert V. Connolly, John P.
CORPORATE SOURCE	Environmental Research Laboratory (Duluth , Minn.)
PUBLISHER	Duluth, MN : U.S. Environmental Protection Agency, Environmental Research Laboratoratory ; Cincinnati, OH : Center for Environmental Research Information [distributor], 1984. 3 p. ; 28 cm.
REPORT DATE	1984
REPORT NUMBER	EPA-600/S 3-84-026 EP 1.89/2-600/S 3-84-026 (GPO Catalog Number)
NOTE	At head of title: Project summary. Distributed to depository libraries in microfiche. "Mar. 1984." "EPA-600/S3-84-026."
SUBJECT	Polychlorinated biphenyls-Environmental aspects-Michigan, Lake; Food chains (Ecology); Michigan, Lake

TITLE	Application of methods 606 and 608 for analysis of PCBs, organochlorine pesticides and phthalate esters contained in landfill leachates
AUTHORS	Bellar, Thomas A. Froning, Beth A.
CORPORATE SOURCE	Environmental Monitoring and Support Laboratory (Cincinnati, Ohio)
PUBLISHER	Cincinnati, OH : Environmental Monitoring and Support Laboratory

REPORT NUMBER	EPA-600/S 4-82-044 (EPA) EP1.89/2-P 76/14 (GPO Catalog Number)
NOTE	At head of title: Project summary. "August 1982." "EPA-600/S4-82-044."
SUBJECT	Polychlorinated biphenyls; Organochlorine compounds; Pesticides-Environmental aspects-Ohio; Fills (Earthwork)-Ohio
TITLE	Applying for a permit to destroy PCB waste oil : volumes I and II
AUTHOR	Zelenski, S. G. Hall, Joanna.; Haupt, S. E.
CORPORATE SOURCE	Industrial Environmental Research Laboratory (Research Triangle Park, N.C.)
PUBLISHER	Research Triangle Park, N.C. : U.S. Environmental Protection Agency, Industrial Environmental Laboratory ; Cincinnati, OH : Center for Environmental Research Information, 1981. 3 p. ; 28 cm.
REPORT DATE	Publication Date(s): 1981
REPORT NUMBER	EPA-600/S2-81-033 (EPA); EP 1.89/2-P 42 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. "Dec. 1981." "EPA-600/S2-81-033."
SUBJECT	Polychlorinated biphenyls; Hazardous wastes-Incineration-Licenses
TITLE	Assessment of wastewater management, treatment technology, and associated costs for abatement of PCBs concentrations in industrial effluents
CORPORATE SOURCE	Corporate Source: United States. Environmental Protection Agency. Office of Toxic Substances.

TITLE	Attenuation of polybrominated biphenyls and hexachlorobenzene by earth materials
AUTHOR	Lewis, Norma M.
CORPORATE SOURCE	Municipal Environmental Research Laboratory.
PUBLISHER	Cincinnati, Ohio : U.S. Environmental Protection Agency, Research and Development, Municipal Environmental Research Laboratory : Center for Environmental Research Information [distributor, 1981] 7 p. : ill. ; 28 cm.
REPORT DATE	1981
REPORT NUMBER	EPA-600/52-81-191 (EPA); EP 1.89/2-P 76/7 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. "Dec. 1981." "EPA-600/S2-81-191."
SUBJECT	Polychlorinated biphenyls; Soil pollution

TITLE	Attenuation of water-soluble polychlorinated biphenyls by earth materials
AUTHOR	Griffin, R. A. Chian, E. S. K.,,joint author.
CORPORATE SOURCE	Municipal Environmental Research Laboratory. Illinois. State Geological Survey. Georgia. Institute of Technology, Atlanta. School of Civil Engineering.

PUBLISHER	Cincinnati, Ohio : Environmental Protection Agency, Office of Research and Development, Municipal Environmental Research Laboratory 93 p. : ill. ; 28 cm.
REPORT DATE	1980
REPORT NUMBER	EPA-600/2-80-027 (EPA); EP 1.23/2-600/2-80-027 (GPO Catalog Number)
NOTE	Prepared by Illinois State Geological Survey, University of Illinois, and School of Civil Engineering, Georgia Institute of Technology, under grant no. R-804684-01. Issued May 1980. Bibliography: p. 87-92.
SUBJECT	Biodegradation

TITLE	Audit of the Vulcanus incineration ship prior to the August 1982 PCB burn, Mobile, Alabama
AUTHOR	Sexton, F. W. Lentzen, D. E.
CORPORATE SOURCE	Industrial Environmental Research Laboratory (Research Triangle Park, N.C.)
PUBLISHER	Research Triangle Park, NC : U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory, [1983] 3 p. ; 28 cm.
REPORT DATE	1983
REPORT NUMBER	EPA-600/S 7-83-023 (EPA); EP 1.89/2-600/S 7-83-023 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. Distributed to depository libraries in microfiche. "June 1983." "EPA-600/S7-83-023."
SUBJECTS	Incinerators-Environmental aspects-United States; Environmental monitoring-United States

TITLE	Determination of pesticides and PCBs in industrial and municipal wastewaters
AUTHOR	Millar, John D.,1921- Thomas, R. E.,1923-
CORPORATE SOURCE	Environmental Monitoring and Support Laboratory (Cincinnati, Ohio)
PUBLISHER	Cincinnati, OH : U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory : Center for Environmental Research Information [distributor], 1982. 6 p. ; 28 cm.
REPORT DATE	1982
REPORT NUMBER	EPA-600/S 4-82-023 (EPA); EP 1.89/2-P 4316 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. "June 1982." "EPA-600/S4-82-023."
SUBJECTS	Pesticides-Measurement; Polychlorinated byphenyls-Measurement; Sewage-Analysis; Gas chromatography

TITLE	Development of a study plan for definition of PCBs usuage, wastes,and potential substitution in the investment casting industry
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Substances.
PUBLISHER	Washington ; Environmental Protection Agency, Office of Toxic Substances, 1976. 35 p. : ill. ; 28 cm.
REPORT DATE	1976
REPORT NUMBER	EPA - 560/6-76-007 (EPA); EO 1.2-1n 8/2 (GPO Catalog Number)
NOTE	Contract no. 68-01-3259. Task III, final report. Bibliography: p. 35.
SUBJECT	Chemicals-Safety measures; Factory and trade waste-United States

TITLE	Effects and interactions of polychlorinated biphenyl (PCB) with estuarine microorganisms and shellfish
AUTHOR	Colwell, Rita R Sayler, Gary S , joint author.
CORPORATE SOURCE	Environmental Research Laboratory, Gulf Breeze, Fla.
PUBLISHER	Gulf Breeze, Fla. : Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory ; Springfield, Va. : for sale by the National Technical Information Service, 1977. ix, 45 p. : ill. ; 27 cm.
REPORT DATE	1977
REPORT NUMBER	EPA - 600/3-77-070 (EPA); EP 1.23-600/3-77-070 (GPO Catalog Number)
NOTE	Grant no. R-803300-01-0. Issued June 1977. Bibliography: p. 43-45.

TITLE	Environmental Protection Agency support document/voluntary environmental impact statement for polychlorinated biphenyls (PCBs) manufacturing, processing, distribution in commerce, and use ban regulation (Section 6(e) of TSCA)
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Substances.
PUBLISHER	Washington, D.C. : Environmental Protection Agency, Office of Toxic Substances, 1979. vi, 159, [4] p. : ill. ; 28 cm.
REPORT DATE	1979
REPORT NUMBER	EP 1.57/3-P 76 (GPO Catalog Number)
NOTE	"Support document/voluntary environmental impact statement and PCB manufacturing, processing, distribution in commerce, and use ban regulation: Economic impact analysis"--Cover. "April 1979." Includes bibliographical references.
SUBJECTS	Polychlorinated biphenyls-Environmental aspects

TITLE	EPA method study 18, method 608 : organochlorine pesticides and PCB's Variant Title: EPA method study eighteen, method 608
AUTHOR	Millar, John D.,1921- Thomas, Richard E.,1946-; Schattenberg, Herbert J.
CORPORATE SOURCE	Environmental Monitoring and Support Laboratory (Cincinnati, Ohio)
PUBLISHER	Cincinnati, OH : U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, 1984. 4 p. ; 28 cm.
REPORT DATE	1984

REPORT NUMBER EPA-600/S 4-84-061 (EPA); EP 1.89/2-600/5 4-84-061 (GPO Catalog Number)

NOTE At head of title: Project summary. Distributed to depository libraries in microfiche. "Aug. 1984." "EPA-600/S4-84-061."

SUBJECT Water-Analysis; Organochlorine compounds-Testing

TITLE EPA method study 28, PCBs in oil

AUTHOR Sonchik, Susan M.
Ronan, Richard J.

CORPORATE SOURCE Environmental Monitoring and Support Laboratory (Cincinnati, Ohio)

PUBLISHER Cincinnati, OH : U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, 1984. 3 p. ; 28 cm.

REPORT DATE 1984

REPORT NUMBER EPA-600/S 4-84-078 (EPA); EP 1.89/2-600/5 4-84-078 (GPO Catalog Number)

NOTE At head of title: Project summary. Distributed to despository libraries in microfiche. "Nov. 1984." "EPA-600/S4-84-078." Variant Title: EPA method study twenty-eight, PCBs in oil

SUBJECT Petroleum-United States-Analysis; Polychlorinated biphenyls

TITLE EPA slow in controlling PCB'S. : report to the Administrator, Environmental Protection Agency

CORPORATE SOURCE United States. General Accounting Office.
Washington, D.C. : The Office, [1981] iv, 31 p. ; 28 cm.

REPORT DATE 1981

REPORT NUMBER GA 1.13-CED-82-21 (GPO Catalog Number)

NOTE "December 30, 1981." Includes bibliographical references.

SUBJECTS	United States; Environmental Protection Agency; Polychlorinated bipheyis-Safety regulaitons
TITLE	EPA's final PCB ban rule : over 100 questions & answers to help you meet these requirements
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Sustances. Industry Assistance Office. United States. Environmental Protection Agency. Office of Toxic Sustances. Chemical Control Division. Rev. ed., June 1980
PUBLISHER	Rev. ed., June 1980. Washington : Office of Toxic Substances, [1980] 40 p. ; 28 cm.
REPORT DATE	1980
REPORT NUMBER	EP 5.2-PL 76 (GPO Catalog Number)
SUBJECTS	Polychlorinated biphenyls

TITLE	Estimation of polychlorinated biphenyls in the presence of DDT-type compounds
AUTHOR	Brownrigg, J. T. Hornig, A. W.,,jt. auth.
CORPORATE SOURCE	National Environmental Research Center, Cincinnati, Ohio.
PUBLISHER	Cincinnati : U.S. Environmental Protection Agency, Office of Research and Development, National Environmental Research Center ; 1974. ix, 90 p. : graphs ; 28 cm.
REPORT DATE	1974
REPORT NUMBER	EPA -670/4-74-004 (EPA); EP 1.23/5-670/4-004 (GPO Catalog Number)
NOTE	Prepared by Baird-Atomic, Inc., Government Systems Division, Bedford, Mass., under program element no. 1BA027 (16020 GIY) Includes appendix. Bibliography: p. 75-77.
SUBJECTS	DDT (Insecticide); Pesticides

TITLE	Evaluation of PCB destruction efficiency in an industrial boiler
AUTHOR	Hall, Joanna.
CORPORATE SOURCE	Industrial Environmental Research Laboratory (Research Triangle Park, N.C.)
PUBLISHER	Research Triangle Park, NC : U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory ; Cincinnati, OH : Center for Environmental Research Information [distributor], 1982. 7 p. : ill. ; 28 cm.
REPORT DATE	1982
REPORT NUMBER	EPA-600/S 2-81-055 (EPA); EP 1.89/2-P 76/12 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. "July 1982." "EPA-600/S2-81-055."
SUBJECTS	Polychorinated biphenyls; Boilers-Efficiency

TITLE	Evaluation of protocols for pesticides and PCB's in raw wastewater
AUTHOR	Caragay, Alegria B. Levins, P. L.,,joint author.
CORPORATE SOURCE	Municipal Environmental Research Laboratory. Arthur D. Little, inc.
PUBLISHER	Cincinnati, Ohio : Environmental Protection Agency, Office of Research and Development, Municipal Environmental Research Laboratory ; Springfield, Va. : for sale by the National Technical Information Service, 1979. ix, 100 p. : ill. ; 28 cm.
REPORT DATE	1979
REPORT NUMBER	EP 1.23/2-600/2-79-166 (GPO Catalog Number)
NOTE	Prepared by Arthur D. Little, Inc., under contract no. 68-01-3857. Issued Nov. 1979. Bibliography: p. 84.
SUBJECTS	Pesticides-Law and legislation-United States; Sewage disposal plants-United States

TITLE	Facilities evaluation of high efficiency boiler destruction PCB waste
AUTHOR	Cotter, J. E. Johnson, R. J.
CORPORATE SOURCE	Industrial Environmental Research Laboratory (Research Triangle Park, N.C.)
PUBLISHER	Research Triangle Park, NC : U.S. Environmental Protection Agency, Research and Development, Industrial Environmental Research Laboratory ; Cincinnati, OH : Center for Environmental Research Information, [distributor], 1981. 6 p. ; 28 cm.
REPORT DATE	1981
REPORT NUMBER	EPA-600/S 7-81-031 (EPA); EP 1.89/2-B 63/3 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. "July 1981." "EPA-600/S7-81-031."
SUBJECTS	Polychlorinated biphenyls-Toxicology; Boilers

TITLE	Follow-up study of the distribution and fate of polychlorinated biphenyls and benzenes in soil and ground water samples after an accidental spill of transformer fluid
CORPORATE SOURCE	United States. Environmental Protection Agency. Oil and Special Materials Control Division.
PUBLISHER	Washington : Environmental Protection Agency, Office of Water Program Operations, Division of Oil and Special Materials Control, 1976. x, 120 p. : ill., map ; 28 cm.
REPORT DATE	1976
REPORT NUMBER	EPA-904/9-76-014 (EPA); EP 2.2.-B 52 (GPO Catalog Number)
NOTE	Prepared in cooperation with U.S. Environmental Protection Agency, Region IV, Atlanta, Ga., under contract no. 68-01-3232. Cover title: Study of the distribution and fate of polychlorinated biphenyls and benzenes after spills of transformer fluid. Includes appendices. Bibliography: p. 8-9.
SUBJECTS	Benzene; Solvents; Soil research; Water, Underground-Research

TITLE	Identification of selected Federal activities directed to chemicals of near-term concern : asbestos, arsenic, benzidine, ethylene, dibromide, hexachlorobenzene, hexachlorobutadiene, polybrominated biphenyls, polychlorinated biphenyls, vinyl chloride, vinylidene chloride
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Substances.
PUBLISHER	Washington : U.S. Environmental Protection Agency, Office of Toxic Substances, 1976. iii, 29 p. ; 27 cm.
REPORT DATE	1976
REPORT NUMBER	EP 1.2-c 42/5 (GPO Catalog Number)
NOTE	Chemicals-Information services-United States; Toxicology-Information services

TITLE	Industry views on the use of polychlorinated biphenyls in transformers and capacitors
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Substances.
PUBLISHER	Washington : U.S. Environmental Protection Agency, Office of Toxic Substances : Springfield, Va. iii, 42p. ; 28 cm
REPORT DATE	1976
REPORT NUMBER	EPA - 560/4-76-003 (EPA); EP 1.2-P 76/6 (GPO Catalog Number)
SUBJECT	Condensers (Electricity)-Testing; Electronic transformers

TITLE	Intrauterine exposure of humans to PCBs : newborn effects
AUTHOR	Fein, Greta G.,,1929-
CORPORATE SOURCE	Environmental Research Laboratory (Duluth, Minn.)
PUBLISHER	Duluth, MN : U.S. Environmental Protection Agency, Environmental Research Laboratory, 1984. [2] p. : ill. ; 28 cm.
REPORT DATE	1984
REPORT NUMBER	EPA-600/S 3-84-060 (EPA); EP 1.89/2-600/5 3-84-060 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. Distributed to despository libraries in microfiche. "June 1984." "EPA-600/S3-84-060."
SUBJECTS	Infants (Newborn)-United States-Effects of drugs on; Polychlorinated biphenyls; Abnormalities, Human-United States

TITLE	National Conference on Polychlorinated Biphenyls, November 1975, Chicago, Illinois : conference proceedings
AUTHOR	Ayer, Franklin A., comp.
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Substances. United States. Dept. of Agriculture. United States. Dept. of Health, Education, and Welfare. United States. Dept. of the Interior. United States. Council on Environmental Quality.
PUBLISHER	Washington : Environmental Protection Agency, Office of Toxic Substances, 1976. xv, 471 p. : ill. ; 28 cm.
REPORT DATE	1976
REPORT NUMBER	EP 1.2-P 76/5 (GPO Catalog Number)
NOTE	Cosponsored by Environmental Protection Agency in cooperation with Department of Agriculture, Council on Environmental Quality, Department of Health, Education, and Welfare, and Department of the Interior. Contract no. 68-01-2928. Includes bibliographical references. Conference Title: National Conference on Polychlorinated Biphenyls, Chicago , 1975.
SUBJECTS	Chemicals-Congresses; Poisons-Congresses

TITLE	PCB emissions from stationary sources : a theoretical study
AUTHOR	Knieriem, Herman,
CORPORATE SOURCE	Industrial Environmental Research Laboratory, Research Triangle Park, N.C. Monsanto Research Corporation.
PUBLISHER	Research Traingle Park, N.C. : Environmental Protection Agency, Office of Research and Development, Industrial Environmental Research Laboratory ; Springfield, Va. : for sale by the National Technical Information Service 1976. iv, 39 p. : ill. ; 28 cm.
REPORT DATE	1976
REPORT NUMBER	EPA - 600/7-76-028(EPA); EP 1.23/8-600/7-76-028 (GPO Catalog Number)

NOTE	Prepared by Monsanto Research Corporation under Contract No. 68-02-1320, Task 26, Program Element No. EHE624A. Issued Oct. 1976. Bibliography: 20-22.

TITLE	PCBs in the United States industrial use and environmental distribution
CORPORATE SOURCE	United States. Environmental Protection Agency. Office of Toxic Substances.
PUBLISHER	Washington : Environmental Protection Agency, Office of Toxic Substances, 1976. xix, 334, [121] p. ; 28 cm.
REPORT DATE	1976
REPORT NUMBER	EPA - 560/6-76-005 (EPA); EP 1.2-P 76/4 (GPO Catalog Number)
NOTE	Contract no. 68-01-3259. Task I, final report. Includes bibliographies and appendices.
SUBJECTS	Factory and trade waste-United States

TITLE	Preliminary operations plan and guidelines for the at-sea incineration of liquid PCB wastes
AUTHOR	Scinto, L. L.
CORPORATE SOURCE	Industrial Environmental Research Laboratory (Research Triangle Park, N.C.)
PUBLISHER	Research Triangle Park, NC : U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory ; Cincinnati, OH : Center for Environmental Research Information [distributor], 1983. 6 p. : ill., 1 map ; 28 cm.
REPORT DATE	1983
REPORT NUMBER	EPA - 600/S2-82-068 (EPA); EP 1. 89/2-600/2 - 2-82-068 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. Distributed to depository libraries in microfiche. "Apr. 1983." "EPA-600/S2-82-068."
SUBJECTS	Polychlorinated biphenyls; Incineration-United States; Waste disposal in the ocean-United States; Polychlorinated biphenyls; Incineration-United States; Waste disposal in the ocean-United States

TITLE	Technical assistance in support of permitting activities for the thermal destruction of PCBs
AUTHOR	McInnes, Robert G.
CORPORATE SOURCE	Industrial Environmental Research Laboratory (Research Triangle Park, N.C.)
PUBLISHER	Research Triangle Park, NC : U.S. Environmental Protection Agency, Industrial Environmental Research Laboratory ; Cincinnati, OH : Center for Environmental Research Information [distributor], 1982. 2 p. ; 28 cm.
REPORT DATE	1982
REPORT NUMBER	EPA-600/S 2-81-240 (EPA), EP 1.89/2-9 76/13 (GPO Catalog Number)
NOTE	Caption title. At head of title: Project summary. "August 1982." "EPA-600/S2-81-240."
SUBJECTS	Polychlorinated biphenyls; Boilers-Efficiency

TITLE	The determination of polychlorinated biphenyls in transformer fluid and waste oils
AUTHOR	Bellar, Thomas A. Lichtenberg, James A.
CORPORATE SOURCE	Environmental Monitoring and Support Laboratory (Cincinnati, Ohio)
PUBLISHER	Cincinnati, Ohio : Environmental Protection Agency, Research and Development, Environmental Monitoring & Support Laboratory : Center for Environmental Research Information [distributor], 1982. 18 p. : ill. ; 28 cm.
REPORT DATE	1982
REPORT NUMBER	EP 1. 23/5-600/4-81-045 (GPO Catalog Number); EPA-600/4-81-045 (EPA)
NOTE	Caption title. At head of title: Test method. "Sept. 1982." "EPA 600/4-81-045."
SUBJECTS	Petroleum waste; Polychlorinated biphenyls