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IDENTIFICATION OF ORGANIC COMPOUNDS
IN EFFLUENTS FROM INDUSTRIAL SOURCES



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FINAL REPORT

ENVIRONMENTAL PROTECTIO 1 AGENCY OFFICE OF TOXIC SUBSTANCES WASHINGTON, D. C. 20460

"IDENTIFICATION OF ORGANIC COMPCUNDS IN EFFLUENTS FROM INDUSTRIAL SOURCES"

FINAL REPORT

Contract No. 68-01-2926 Task 3

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Prepared For:

Environmental Protection Agency Office of Toxic Substances Waterside Mall Washington, D.C. 20460

FOREWORD

This report presents the results of a six-week technical effort by the General Technologies Division (GTD) of Versar, Inc., Springfield, Virginia, under Task III of EPA Contract No. 68-01-2926. It was administered under the direction of the Special Projects Branch, Office of Toxic Substances, Environmental Protection Agency, Waterside Mall, Washington, D.C., with David Garrett, P.E., and Herbert Katz, Ph.D., as Project Monitors.

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This report has been reviewed by the Office of Toxic Substances, EPA, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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1.0 INTRODUCTION

Studies at the EPA research laboratories in C noinnati identified over 150 organic compounds in drinking water supplies of communities on the Ohio, Potomac and Mississippi Rivers (see Appendix A). The Special Projects Branch, Office of Toxic Substances, EPA, in Washington, D.C. initiated this project to identify the types of industrial facilities known or suspected of discharging any of the identified organic compounds. After these possible industrial sources are identified, gross annual discharge estimates of the waterborne compounds are to be made along with the persistency of these chemicals to remain intact through possible treatment systems and thereby reach drinking water supplies.

Along with the industrial sector, possible water and airborne natural sources, agricultural sources and other non-point sources are also to be identified without quantification.

After performing these tasks, a plan is to be formulated to attack the overall problem of specifically identifying, quantifying, monitoring and eventually eliminating this threat from industrial and other sources as realistically as possible within a two-year period.

From recent EPA analyses of drinking water is various communities, there is convincing evidence that carcinogens and potentially carcinogenic and/or toxic organic compounds are present as contaminants.

Industrial sources which have been identified as sources of certain chemical carcinogenic substances by the National Cancer Institute include:

Petroleum Products

Petroleum refinery wastes containing polycyclic aromatic hydrocarbons; fuel oils, lubricating oils and cutting oils from garages, service stations, petrochemical plants, metalworking plants, ships; products used as vehicles of insecticide sprays; tarred or asphalted roads.

Coal Tar

Effluents from gas plants, coke oven operations, tar distilleries, tar-paper plants, wood pickling plants.

Aromatic Amino- and Nitro- Compounds

Amino compounds and their nitro-analogs are released by dye and rubber manufacturing, pharmaceutical factories, textile dyeing plants, plastics production, and others.

Pesticides, Herbicides, Soil Sterilants

Compounds such as DDT, dieldrin, carbon tetrachloride and many others are released by pesticide manufacturers. The majority of pesticides, herbicides, and soil fumigants in water arises from agricultural and urban runoff.

In addition to industrial wastes, discharges from domestic treatment plants may also be responsible for a variety of chlorinated organic compounds found in water. Similarly, chlorination of polluted river water has been found to produce compounds such as chloroform, dichlorobromomethane and other halomethanes and haloethanes.

Intermittent problem sources are spills and accidents from industrial operations, barge traffic, or other transport vessels.

Thus, it can be concluded that public drinking water supplies may be routinely contaminated with carcinogenic and potentially carcinogenic substances from industrial and municipal discharges, accidental spills, runoff from agricultural and urban areas, and from the chlorination process at water treatment plants.

This program represents a short duration study of available information pertinent to point source and non-point source contribution of organics to drinking water supplies. The following sections of this report summarize the results of the study, recommend a program plan to fully characterize and possibly eliminate the problem of hazardous organics in drinking water on a nation-wide scale, and present the data found for the individual chemicals on the list and the methodology used to acquire the information.

2.0 SUMMARY

The discharge of treated or untreated industrial waterborne effluents is the most obvious industrial contribution to the presence of organics in drinking water. Since the legal requirements for discharge from point sources have in the past emphasized allowable BOD, many industries have chosen to chlorinate their final effluent in order to meet this standard. This practice can, however, create highly refractory substances even though the legal requirements on BOD are satisfied.

Discharged compounds may pass through municipal systems unchanged, may become halogenated, or may be partially or completely degraded. Certain of these compounds may also be precursors of other pollutant compounds found in downstream drinking water supplies.

Industry may also contribute a certain amount of organics to the air through stack emissions, incineration and evaporation of volatile solvents. These compounds may be reintroduced to surface waters and soil by rainfall.

Industrially related compounds may reach drinking water supplies through ground water contamination. Organic constituents of landfilled solid wastes, sludges, and slurries may leach through soil to ground water due to rainfall and surface runoff. These leached compounds may be partially or completely degraded by soil microorganisms. Chemical interactions may also occur during soil and ground water migration forming other organic compounds potentially destined for surface waters.

In addition to industrial wastes, discharges from domestic treatment plants may also be responsible for a variety of chlorinated organics found in drinking water. Similarly, chlorination of river water containing natural and/or synthetic organics has been found to produce several halomethanes and haloethanes.

There were 162 compounds on the original list of organic chemicals under consideration. Eight have been deleted as either incorrect designations or duplicates. The investigation of the remaining 154 compounds included identification of industrial, municipal, natural and consumer related sources of air and water contamination, assessment of biodegradability and effective treatment methods and gross estimates of annual discharge from industrial sources.

Of the 154 compounds, 113 have been classified as major products or byproducts according to the 1973 SRI Directory of Chemical Producers (USA). (It was found that 34 SIC categories provided almost complete coverage of the major producers and users of these chemicals.) The remaining chemicals have been found to be manufacturing contaminants, metabolites or degradants of other compounds, compounds from natural sources, or formations arising from water and sewage treatments. In a few cases, however, no information could be found regarding chemical origin.

Gross estimates of annual industrial discharge ranged from less than one ton per year for certain pesticides, to approximately 100,000 tons per year in the case of benzene, which arises from petroleum refining as well as from many other less significant industrial processes.

General consumer use of industrial products is a major though much less obvious source of contamination of air, soil and water. An example is the manufacture of paints and coatings where only 1-3 per cent of starting materials and product may be lost to air, water or solid waste. However, after application by the consumer, all the material is eventually released to the environment. Loss during industrial product use appears to be the greatest potential source of organic pollutants because recovery of product is maximized during industrial manufacture.

Sixty-seven of the compounds under consideration may be formed by various chemical reactions in air water or soil. These include photoactivated radical reactions, oxidation and photooxidation reactions, aqueous halogenation reactions, degradative reactions by soil organisms, epoxidation reactions, etc. An example of a gaseous photochemical reaction is formaldehyde plus hydrogen chloride forming chloromethyl ether. This compound may subsequently reach surface waters during a rainfall.

From the information gathered on biodegradability and persistence, the organic compounds were divided into five categories: (1) easily degraded; (2) degraded without much difficulty; (3) difficult to degrade; (4) very difficult to degrade; and (5) refractory. Category 1 includes 7 of the 154 chemicals; category 2 includes 17; category 3 includes 41; category 4 includes 36; and category 5 includes 53. More than 80 per cent of the identified compounds appear in categories 3 through 5. This would be expected, since less persistent chemicals should degrade closer to their sources before they could be detected by sampling and be identified. Because most of these chemicals are not readily biodegradable, they must be concentrated by physical-chemical methods and then incinerated or properly disposed by other methods. Other treatment methods which are effective in varying degrees in removing most of these chemicals include activated carbon, biological treatment and volatilization by spray aeration.

Near the conclusion of the present study the scope of work was expanded by EPA to include an Appendix (D) which would list the cities where each specific organic chemical has been reported. The purpose was to indicate what is known about the nationwide occurrence of specific organic compounds in drinking water. National occurrence data is given for all 154 chemicals which had been identified in drinking water as of 11/25/74, and for an additional 68 compounds which had been reported in the last week of the project as a result of a continuing effort by EPA, or were reported in the primary literature and will be included in the future EPA listings of organic compounds identified in drinking water.

3.0 RECOMMENDATIONS

3.1 Proposed Program Plan

Objective: To characterize industrial sources of organic pollutants and to correlate

industrial discharges with the presence of specific organics in selected

drinking water supplies.

Scope: The program will be limited to the identification and quantification

of industrial point sources of discharge. These discharges may be to water bodies, municipal waste treatment facilities or aquifers through

percolation, leaching, runoff, etc.

Technical The objectives of this program will be reached by the accomplishment

Approach: of the following tasks:

Task 1 - Identification and Correlation of Past and Present Effort Regarding Organics in Drinking Water

Ten major drinking water supplies selected by EPA will be covered in a comprehensive manner for complete identification of selected organic pollutants found in each water supply which are considered by EPA to be actual or potential health hazards while eighty other drinking water supplies selected by EPA will be limited to the identification of selected volatile organics.

This task will be a continuing one through the program with heavy emphasis during the first six months. It will involve an intersive literature search and/or contacting all past and present EPA contractors, EPA regional offices, NERC's, EPA field laboratories, other Federal and local agencies, and universities to compile the results of past and present efforts pertinent to this study. These results will be analyzed for thoroughness regarding the identification of all probable industrial contributors to the specific water supplies. Areas there data appear to be weak or missing will be pointed out and arrangements will be made to obtain the needed information either by additional effort on the part of the original investigators or by fill-in effort by the contractor.

At the end of six months, an interim report will be submitted documenting the results of Task 1 effort to date and recommending necessary technical efforts to achieve the program objectives.

The continuing effort of Task 1 will involve the updating of information as it becomes available from the various monitoring sources such as annual reports from the states on the quality of all navigable waters as required by Section 305 (b) (1) of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500) and

other sources engaged in continuing programs of this nature. Other efforts in this task will include the standardization of sampling, analytical and reporting methods. Another important effort in this task should be the investigation of modeling techniques suitable for performing mass balances on waterways. A schematic diagram showing possible sources of waterway contamination is given in Figure 3.1. The scope of the proposed program is included within the dotted lines on this figure.

Task 2 - Characterization of Industrial Input to the Various Drinking Water Supplies

This task can be initiated on any of the EPA specified cities and associated drinking water supplies while Task 1 data is being gathered for those specific locations. The magnitude of this task for each of the drinking water supplies will depend on the size of the supply and on the amount of pertinent information previously gathered on the supply. The gathering of this information is necessarily a multidisciplinary project including such fields as geology, hydrology, analytical, organic, and physical chemistry, economics, and chemical and civil engineering. A suggested method of achieving the program objectives for any of the drinking water supplies is given below using Washington, D.C. and the Potomac River Basin as an example city and source of drinking water supply respectively.

Subtask 1. Compile all information available on the Potomac River Basin such as the specific hazardous or potentially hazardous organic chemicals identified in Washington, D.C. drinking water, the location of and data extracted from all existing monitoring stations in the basin (both state and federal), from EPA Region III office, and any data measured on effluents from specific industrial plants. For example, the State Base Water Quality Monitoring Network on the Potomac River Basin consists of 55 sampling stations strategically located at the confluence of major tributaries and near U.S. Geological Survey Basin gauging stations to take advantage of their flow measurements.

Subtask 2. Utilize the NPDES Permit Program to list every individual establishment having a point source discharge into the Potomac or any of its tributaries. Select those facilities which are suspect as probable sources of those organic chemicals selected by EPA to be health hazards, identified in Washington, D.C. drinking water. Utilizing Section 308 of the FWPCA, contact these facilities to obtain industrial concurrence of the possible discharge of the chemical(s) from their plant or other precursor chemicals which could possibly react in some way with other chemical(s) present in the receiving water body to form the identified organics. If possible, quantify the discharges and effectiveness of the wastewater treatment system used.

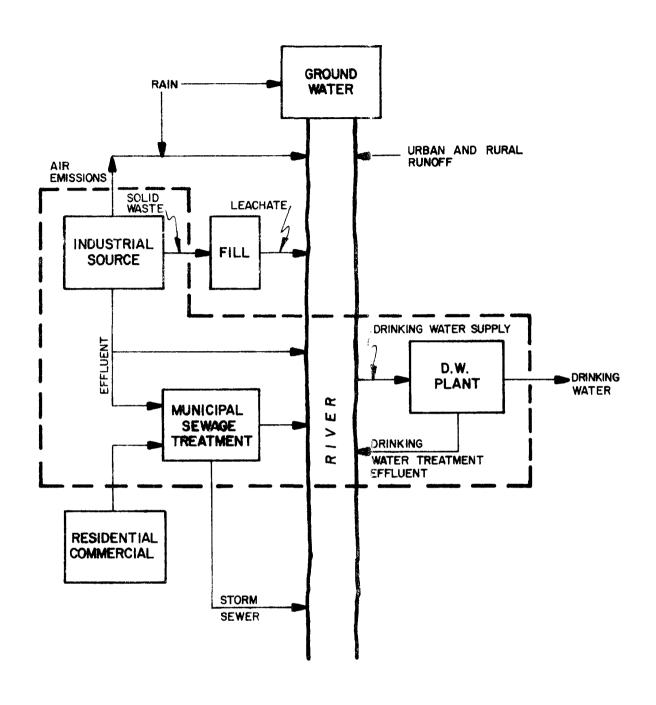


FIGURE 3. SCHEMATIC DIAGRAM OF PROPOSED SCOPE OF WORK

- Subtask 3. Contact all municipal wastewater treatment facilities identified from the NPDES Permit Program that discharge into the Potomac or any of its tributaries and obtain a listing of all industrial users of municipal sewage systems. Utilize a Dun and Bradstreet search by SIC code and by state and/or county as a cross check. Once this list is established, repeatesubtask 2.
- Subtask 4. Identify all drinking water supplies upstream of Washington, D.C. and contact them to obtain any pertinent information useful to the program such as analyses of river water for specific organic chemicals and water use rates.
- Subtask 5. Determine whether or not the information available from subtasks 1 through 4 is sufficient to perform a mass balance on the river to confirm the industrial sources of the selected organics. Determine if the existing sampling sites are located properly with respect to the industrial discharges or if non-point sources such as agricultural runoff could be responsible for the presence of the chemical(s).
- Subtask 6. If the results of subtask 4 are negative or marginal, select the appropriate industrial facilities for effluent sampling. For plants using municipal sewage systems, the samples should be taken of the plant effluents. Care should be taken to obtain representative samples and flow measurements over periods of time while the manufacturing processes, suspect as sources of the waste organic chemicals, are operating. The samples should be analyzed by standard EPA methods using GC-MS techniques for the organics in question.
- Subtask 7. Taking into consideration the persistency of the selected identified organic chemicals and/or the possibilities of reaction with other chemicals present downstream to form any of the pertinent chemicals, prepare a list of industrial sources along with their respective contributions to the river. Then sample the river and analyze for any of the pertinent organic chemicals. Compare the industrial input of the selected organic chemicals with the totals of these chemicals previously and presently measured in the river at Washington, D.C. and assess the contribution by non-point sources. This approximates a materials balance on the river.

Task 3 - Recommendation of Abatement Practices and Associated Costs

This task can be initiated as soon as positive identification of industrial point sources are made. It involves contact with industrial plant personnel to discuss the possible elimination of the specific chemicals of principal concern in their discharge to the river or to a municipal sewage system by raw material changes, process changes, improvements in wastewater treatment techniques, etc., and to obtain estimates of capital and operating costs for the proposed abatement practices.

In order to recommend cost-effective treatment, in sinecessary to correlate the figures from industry to costs for prospective drinking water treatment techniques.

3.2 Recommended Plan Implementation

Although the preceding program plan is constructed to be implemented on a nation-wide basis with simultaneous investigations of each selected city and associated water supply, it is recommended that a pilot study be performed to determine the effectiveness of the plan.

It is recommended that as soon as possible after the start of Task 1, EPA decide on one city and associated water supply, for which considerable data exists, to be investigated using the proposed plan. In the area selected, the regional EPA office and appropriate NERC center should be included in the planning and implementation of the study. This pilot study will serve to determine the effectiveness of the plan and also will undoubtedly bring to light other ideas and courses of action that will strengthen the plan for use throughout the rest of the nation. The duration of the recommended pilot study is 10 months as shown on Figure 3.2, the proposed program schedule.

Figure 3.2 Proposed Program Schedule

4.0 TECHNICAL APPROACH AND RESULTS

4.1 Technical Approach

The following subsections describe how the technical objectives of this program were accomplished.

4.1.1 Data Collection and Assimilation

This program began with an extensive information gathering phase. This consisted of utilizing the Versar library and the Library of Congress, in addition to the resources available at the following U.S. Government agencies: Department of Agriculture, Tariff Commission, Bureau of Census, and Environmental Protection Agency. As research progressed, EPA activities in Cincinnati, Ohio, and Athens, Georgia, were visited in order to gain first hand knowledge of research and monitoring activities which impacted directly on the work. Additional data was acquired from the EPA Project Officers during the weekly meetings. In order to fully utilize technical expertise, consultants were also employed.

The initial effort included the identification of pollution sources and the development of several classification schemes which facilitated handling and presentation of the data. Several approaches were used to categorize the compounds under consideration: a chemist's approach resulted in a chemical classification scheme (alkanes, ketones, etc.), a chemical engineering approach led to classification by method of chemical manufacture, and finally, an assessment of potential discharge from industrial sources resulted in classification by SIC code.

4.1.2 Estimations of Annual Industrial Waterborne Discharges for Specific Organics

Several mathematical relationships were developed to estimate the annual discharge for each of the compounds. The methods were derived and applied on the basis of available data. The resulting estimates are intended to be only general indications of the magnitude of industrial organic discharge (gross estimates). Several variables which were used in making these estimates are explained below.

GE	Gross estimate of annual discharge
RWL	Raw waste load per unit of production (lbs raw waste/lb product)
AP	Annual production
ÇO	Concentration of organics in waterborne waste
CC	Concentration of a given compound in organic fraction of waterborne waste
TF	Treatment factor; 100%-national average treatment efficiency for various widely used treatments

UC Per cent of annual production consumed by each specific use

UL Per cent lost during each specific use (process dependent)

PF Proportionality factor

CW Average concentration of an organic constituent

WD Annual wastewater discharge

WR Ratio of gallons of treated wastewate: per pound of product

Method 1

This method is used when the annual production, major industrial use distribution, raw waste load per unit of production and organic content of waterborne waste are known. Method 1 is a two step procedure. Fart A is the estimated discharge from the manufacture of a given compound. Part B is the estimated discharge from the industrial uses of the compound.

A. The annual discharge of a compound due to its manufacture may be estimated by multiplying the raw waste load per unit of production (RWL), annual production of the compound (AP), the total percentage of organics in the waterborne waste (CO), the percentage of the given compound in the organic fraction (CC), and the average treatment factor (TF).

B. Estimation of annual discharge due to industrial use is based on the total annual production for a compound (AP), the per cent of annual production consumed by each specific use (UCI...n), the percent which may be discharged during each specific use (ULI...n), and an average treatment factor (TF). Total raw organic compound discharge is estimated by a summation of the products of the amount used for each application (AP•UC) and the specific loss factors (UL). This total, multiplied by an average treatment factor (TF), estimates the annual discharge due to industrial use.

$$GEIB = \left[\sum (AP \cdot UC1 \cdot UL1 + AP \cdot UC2 \cdot UL2 + \cdots + AP \cdot UCn \cdot ULn \right] \cdot TF$$

The totals from industrial manufacture and use (parts A and B) are added together to give the estimate of annual discharge.

Method 2

This method was used when sufficient information was available to determine annual discharge of a compound due to industrial use by Method 1B above, but insufficient data was available for an estimate by Method 1A. It was assumed that

the industrial user source could be expected to act out for a certain fraction of the total annual industrial discharge. This fraction was expressed as a proportionality factor (PF). By multiplying the discharge due to industrial use (GE<u>1B</u>) and the reciprocal of the proportionality factor the total annual industrial discharge was estimated. This equation is derived below.

$$PF \cdot GE2 = GE18$$

(1/PF) $\overline{(PF \cdot GE2)} = (GE1B)$ (1/PF)
 $GE2 = GE1B \cdot 1/PF$

Method 3

Method 3 was used when the average concertration of a given compound (x) in the waste stream of a given industry (y) was known. The discharge of the particular industrial segment was determined, and it was then assumed that this industrial segment accounted for a certain fraction of the total annual discharge expressed as a proportionality factor (PF). Total annual industrial discharge was estimated by multiplying the average concentration of the given compound in the waterborne effluent (CWi), the total annual wastewater discharge of the given industrial segment (WDi), and the reciprocal of the proportionality factor (PF). This equation is derived below.

Method 4

This method was used for isodecane, decane, methane, nonane, octane and pentane which are potential pollutants in petrorefinery and polyolefin manufacturing waste streams along with other alkanes with higher carbon numbers. No information was found that would allow any of the previous three estimation methods to be employed. The estimate of annual industrial discharge of any of the above unsubstituted alkanes with ten or less carbon atoms was made equivalent to one half of the average annual discharge of all the unsubstituted alkanes with more than ten carbon atoms (determined by Method 3).

$$GE4 = 1/2 GE3$$

Method 5

Method 5 applies to pesticides and related compounds, and accounts only for the pollution potential due to their production and not their use, which is of

much greater significance. The calculations are based on actual production figures or reliable estimates. Method 5.1 was used for the diolefin-based insecticides (aldrin, chlordane, dieldrin, endrin, and heptachlor) where the ratio of gallons of treated wastewater per pound of product (WR) was known and was multiplied by the annual production (AP) to give the annual treated wastewater discharge, which was then multiplied by the known concentration of the compound in treated wastewater (CW), to estimate the annual discharge. The annual discharge estimate for heptachlor was used to extrapolate those of heptachlor exoxide and heptachloronorbornene assuming that these compounds would be present in an amount proportional to that of heptachlor.

The estimates of annual discharge for atrazine, (de)ethyl atrazine, DDE, DDT, hexachlorobenzene, hexachlorocyclohexane or lindane, pentachlorophenol, and 2,4,6-trichlorophenol (Method 5.2) were also based or production figures. Multiplying production (AP) by a factor of 3 1/2% (typical amount of waste from chlorination processes) determined the level of pesticides in raw waste, and then applying a 99% treatment factor yielded the final gross estimate of annual discharge.

GE5.1 = WR
$$\cdot$$
AP \cdot CW
GE5.2 = AP \cdot 3.5% \cdot TF

Method 6

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This method was designed for those compounds for which no information was found that would allow any of the previous five estimation methods to be employed.

The estimate of annual industrial discharge of a given compound was assumed to be equal to the product of the average concentration of the compound in municipal sources (CWm), the annual municipal discharge (WDm), and the reciprocal of a proportionality factor (PF) relating the importance of the entire industry's discharge to that of the municipal segment.

$$GE6 = CWm \cdot WDm \cdot 1/PF$$

Method 7

In this method, the estimated annual discharge of a given compound was obtained by correlating that compound to another compound with similar uses, properties or structure. For instance, the gross estimate of annual discharge of trichlorofluoromethane is one ton per year. Although dichlorodifluoroethane is used industrially in a similar fashion, it is much less volatile. For this reason, its annual discharge was estimated to be 10 tons per year or an order of magnitude higher than the more volatile chemical.

$$GE7 = Comparison with $GE1-6$$$

4.1.3 Chemical Reactions

The identification of chemical reactions that could form any given compound was achieved primarily by an intensive literature search and extrapolation of information to general classes of compounds. The concept of "chemical reactions" was interpreted to mean any interaction of two or more chemicals, or any degradation of, or evolution from, a parent or precursor compound to form a given compound in air, water, or soil.

4.1.4 Biodegradability (Persistence)

Five broad categories of biodegradability were developed to encompass the range of environmental persistence and treatability which various compounds may exhibit in the environment. The persistency characteristics of the chemicals were investigated, and each compound was placed in the category which most completely represented its behavior. Table 4.1.1 lists the biodegradability, persistence and treatability parameters for each of the five categories.

Persistence was weighted toward ease of biodegradation in water and soils. It is recognized that many nonbiological reactions and physical processes may influence the persistence of certain compounds. For example, the multi-halogenated methanes and ethanes were classified as refractory because of resistence to biodegradation, although they volatilize quickly from water and soils to the air where free radical reactions and high energy oxidations will affect their overall environmental persistence.

Table 4.1.1 Biodegradability (Persistence) Categories

Category	Biodegradability	Persistence in Unadapted Soil	Success of Biological Treatment of Point Source	Typical Chemical
(1)	Easily degraded	1-3 weeks	Susceptible to normal waste treatment.	Acetic acid
(2)	Degraded without much difficulty	1-3 months	Susceptible to normal waste treatment.	Benzoic acid
(3)	Difficult to degrade	3 months to 1 year	Prolonged treatment	e-caprolactam
(4)	Very difficult to degrade	1-2 years	with prolonged treat-	Chlorobenzene
(5)	Refractory	> 2 years	Cannot be treated biologically.	Hexachloro- benzene

4.1.5 Data Display

The most concise and meaningful method for displaying the gathered material was to provide separate data sheets for each chemical. An important advantage of this format is the amenability of the display to an automated file system, which provides an easily usable form for the Office of Toxic Substances, EPA. The individual information sheets are presented in Appendix C.

The chemical name, structure, chemical class and CAS number (if assigned), all serve to identify the specific chemical (Sections 1-3).

For each chemical, Sections 4A, B, and C focus on potential discharge sources to both water and air from industrial point sources, treatment point sources and non-point sources. Industrial sources consist of chemical manufacturers and those industries utilizing one of the chemicals in some production capacity (Section 4A). The gross estimates of annual discharge of each chemical from all industrial sources is given in Section 4.A.3 of each data sheet. These estimates do not include discharges from treatment point sources or non-point sources presents data on the potential formation of the compounds during waste treatment and disposal. Treatment of sewage and solids, incineration, other disposal technologies, and drinking water treatment systems were considered as possible pollutant sources. In section 4C non-point sources of discharge were considered. These nonpoint sources were broken down into four categories: natural sources occurring through normal growth and metabolic cycles; possibility of formation by chemical reaction of proper constituents in air and/or water; leaching from solid waste piles or landfills where a compound is present; man-caused sources such as agricultural application of pesticides resulting in agricultural runoff.

Sections 5 and 6 deal with biodegradability and effective treatment method. Biodegradability is a measure of the persistence of a chemical through a biological treatment system or natural biological degradation. Categories were assigned indicating degree of difficulty of degradation for each chemical. Treatment methods for each chemical were included and their effectiveness noted where this information was available.

4.2 Categorizations

The list of compounds identified in drinking water was categorized in three ways, by chemical class, by method of industrial manufacture, and by the manufacturing Standard Industrial Classification (SIC) industries from which these chemicals might be discharged.

The chemical classification as shown in Table 4.2.1 is self explanatory. The Water Quality Criteria Data Book, Volume 1: Organic Pollution of Freshwater classification system was followed.

The categorization according to industrial method of manufacture appears in Table 4.2.2 and was made utilizing similarities of manufacture. Those chemicals with several methods of manufacture were listed under each appropriate category. The industrial categorization scheme is not exhaustive, and was intended primarily to assist in data analysis for the various groupings of compounds.

A great variety of industrial uses of the subject chemicals was evidenced as the project progressed. As a means of illustrating the diverse sources of specific chemical release to waters, the probable discharge cources were categorized according to manufacturing SIC industries in Table 4.2.3. Information concerning organic constituents was obtained from the Southeast Environmental Research Lab, from EPA Surveillance and Analysis data files, from a variety of literature sources concerning industrial effluents, and from the industrial uses of the subject compounds. Industries identified as having one or more compounds in their effluent were grouped into 4-digit SIC codes. Only point sources of industrial manufacture and use were considered; this excluded all potential discharges resulting from agricultural application, domestic use, etc. Because of the short duration of this program, this categorization should not be considered inclusive.

Table 4.2.1 Categorization by Chemical Class

ALKANES AND ALKENES

Unsubstituted

decane (46)	nonan∋ (121)
docosane (72)	octadecane (122)
n-dodecane (73)	octane (123)
eicosane (74)	pentacecane (127)
2-ethyl-n-hexane (79)	pentane (128)
hexadecane (91)	tetradecane (140)
isodecane (94)	n-trid∋cane (149)
limonene (99)	n-und∋cane (152)
methane (101)	

Halogenated

Cyclic

aldrin (7)	heptachlor (84)
chlordane (32)	heptachlor epoxide (85)
dieldrin (56)	1,2,3,4,5,7,7-heptachloronorbornene (86)
endrin (75)	hexachlorocyclohexane (89)

Noncyclic

acetylene dichloride (6) bromodichloromethane (22)	hexachloro-1,3-butadiene (88) hexachloroethane (90)
bromoform (23)	methyl chloride (108)
butyl bromide (27)	octyl chloride (124)
carbon tetrachloride (31)	tetrachloroethane (138)
chloroform (36)	tetrachloroethylene (139)
dibromochloromethane (48)	1,1,2-trichloroethane (145)
dibromodichloroethane (49)	1,1,2-trichloroethylene (146)
dichlorodifluoroethane (53)	trichiorofluoromethane (147)
1,2-dichloroethane (54)	methylene chloride (117)

ALCOHOLS

borneol (19) di-isobutyl carbinol (61) ethanol (76) isoborneol (96)

1-terpineol (135)

methanol (102)
methyl phenyl carbinol (1-phenylethanol) (114)

pentanol (129) propanol (132)

AMINES

Aliphatic

ethylamine (77)

propylamine (133)

Nitriles

2-hydroxyadiponitrile (92)

Heterocyclic

atrazine (8) (deethyl) atrazine (9) barbital (10) 3 chloropyridine (42)

2-methyl-5-ethyl-pyridine (110)

trimethyl-trioxo-hexahydro-triazine isomer (15

Amine derivatives - Amides

e-caprolactam (29)

BENZOTHIAZOLES

benzothiazole (16) methyl benzothiazole (105) thiomethylbenzothiazole (141)

Table 4.2.1 Categorization by Chemical Class - continued

ORGANIC ACIDS

Carboxylic

acetic acid (3)

benzoic acid (14)

Sulfonic

benzene sulfonic acid (13)

ESTERS

Phthalates

benzyl butyl phthalate (18) dibutyl phthalate (51) diethyl phthalate (57) di (2-ethyl hexyl) phthalate (58) dihexyl phthalate (59) di-isobutyl phthalate (62) dimethyl phthalate (66) dipropyl phthalate (71)

Alkyl Esters

behenic acid, methyl ester (11) dioctyl adipate (70) methyl ester of lignoceric acid (100)

methyl palmitate (113) methyl stearate (116)

Aryl Esters

methyl benzoate (104)

phthalic anhydride (131)

phenyl benzoate (130)

PHOSPHATE ESTERS

triphenyl phosphate (151)

ALDEHYDES AND KETONES

Halogenated

bromoform butanal (24) ? 1,3,3-tetrachloroacetone (136) chlorohydroxy benzophenone (37)

Alkane Derivativ s

acetaldehyde (2) mothyl ethyl ketone (109) acetone (4) 2-methyl propanal (115) 3-methyl butanal (107)

Cyclic Alkane Derivatives

camphor (28) isophorone (95) dihydrocarvone (60)

Aryl Alkane Derivatives

acetophenone (5)

ETHERS

Non-Halogenated

1,2-dimethoxy benzene (63) trans-2-ethyl-4-methyl-1, 3-dioxolane (81 2-methoxy biphenyl (103) 3-dioxolane (80)

Halogenated

bromophenyl phenyl ether (25)

1, 2-bis-chloroethoxy ethane (34)

b-chloroethyl methyl ether (35)

dichloroethyl ether (55)

b s-chloroisopropyl ether (38)

chloromethyl ether (39)

chloromethyl ether (40)

AROMATICS

Unsubstituted

acenapthylene (1) indene (93)
benzene (12) napthalene (118)
benzopyrene (15)

Phenols and Quinones

o-cresol (43)
di-t-butyl-p-benzoquinone (50)
2,4-dimethyl phenol (65)
4,6-dinitro-2-aminophenol (68)
guaiacol (83)
pentachlorophenol (126)
2,4,6-trichlorophenol (148)

Aromatic Derivatives

Halogenated

Benzene Derivatives

bromobenzene (20)
bromochloropenzene (21)
chloropenzene (33)
m-chloronitropenzene (41)
dibromobenzene (47)
1,4-dichloropenzene (52)
hexachloropenzene (87)
trichloropenzene (143)

Aryl Alkane Derivatives

DDE (44) DDT (45)

Biphenyl Derivatives

pentachlorobiphenyl (125) trichtorobiphenyl (144) tetrachlorobiphenyl (137)

Nitro Compounds

2,6-dinitrotoluene (69) nitrobenzene (120) nitroanisole (119)

Aryl Alkanes

butyl benzene (26)	methylindene (111)
1,3-dimethylnapthalene (64)	methyl napthalene (112)
ethyl benzene (78)	propylbenzene (134)
o-ethyltoluene (82)	to uene (142)
1-isopropenyl-4-isopropylbenzene (97)	vinyl benzene (153)
isopropyl benzene (98)	xylene (154)
methyl biphenyl (106)	•

MERCAPTANS AND OTHER SULFUR ORGANICS

benzothiophene	(17)	dimethyl sulfoxide	(67)
carbon disulfide	(30)		

Table 4.2.2 Categorization by Manufacturing Method

PETROLEUM DISTILLATES

acenaphthylene (1)
benzene (12)
benzopyrene (15)
o-cresol (43)
decane (46)
1,3-dimethylnaphthalene (64)
2,4-dimethyl phenol (65)
docosane (72)
n-dodecane (73)
eicosane (74)
ethyl benzene (78)
2-ethyl-n-hexane (79)
hexadecane (91)
indene (93)
isodecane (94)

isopropyl benzene (98)
methane (101)
methy: naphthalene (112)
naphthalene (118)
nonane (121)
octadecane (122)
octane (123)
pentane (128)
tetradecane (140)
toluene (142)
n-tridecane (149)
n-undecane (152)
xylene (154)
pentadecane (127)

COAL PROCESSING WASTES

acetaldehyde (2) benzopyrene (15) butyl benzene (26) carbon disulfide (30) carbon tetrachloride (31) 1,3-dimethylnaphthalene (64) ethanol (76)
ethylamine (77)
1-isopropenyl-4-isopropylbenzene (97)
methanol (102)
propylbenzene (134)

PHTHALIC ANHYDRIDE REACTIONS

benzyl butyl phthalate (18) dibutyl phthalate (51) diethyl phthalate (57) di(2-ethyl hexyl) phthalate (58) dihexyl phthalate (59) di-isobutyl phthalate (62) dimethyl phthalate (66) diprophyl phthalate (71)

ESTHER OF ACIDS

behenic acid, methyl ester (11) dioctyl adipate (70)

lignoceric acid, methyl ester (100)

methyl benzoate (104) methyl palmitate (113) methyl stearate (116)

VARIOUSLY RECOVERED FROM NATURAL MATERIALS

borneol (19) camphor (28) guaiacol (83) limonene (99) methyl benzoate (104) 1-remineol (135)

isoborneol (96)

OXIDATION OF ALCCHOLS

acetaldehyde (2)

acetone (4)

acetic acid (also oxidation

3-methyl butanal (107)

of acetaldehyde) (3)

OXIDATION OF OTHERS

acetaldehyde (sat. HC's or ethylene)(2) heptachlor epoxide (heptachlor with Na₂ Cr₂ acetic acid (3)

methanol (partial oxidation of natural gas HC's) (102)

acetophenone (ethyl benzene) (5) benzoic acid (from toluene) (14)

methyl ethyl ketone (119) phthalic anhydride (131)

dieldrin (from aldrin) (56)

propanol (132)

endrin (from isodrin) (75)

dimethyl sulfoxide (from dimethyl sulfide) (¿

DEHYDROGENATIONS OR DEHYDROHALOGENATIONS (UNSATURATED)

acetylene dichloride (red. of

vinyl benzene (153)

tetrachloroethane or trichloroethane) (6) trichloroethylene (tetrachloroethane) (146)

ALKYLATION OF AROMATICS

ethyl benzene (78)

nicroanisole (119)

o-ethyltoluene (82)

propylbenzene (catalysis by-product) (134)

isopropyl benzene (catalysis) (98)

HALOGENATION OF AROMATICS

bromobenzene (20)
bromochlorobenzene (21)
chlorobenzene (33)
chloronitrobenzene (with la catalyst)(41) tetrachlorobiphenyl (125)
dibromobenzene (47)
dichlorobenzene (52)
hexachlorobenzene (87)

hexachlorophenol (148)

HALOGENATION OF NON-AROMATICS

acetylene dichloride (6) octyl chloride (124) bromodichloromethane (22) tetrachloroethane (138) tetrachloroethylene (139) bromoform (23) butylbromide (27) trichloroethane (145) trichlorofluoromethane (146) carbon tetrachloride (31) bis-chloroisoprophyl ether (38) chloroform (36) dibromochloromethane (48) chloromethyl ether (39) ethylene dichloride (54) chloromethyl ethyl ether (40) hexachloroethane (90) dichloroethyl ether (55) methyl chloride (108) chlordane (32) methylene chloride (117) heptachlor (84)

HYDROGENATIONS

ethanol (catalysis) (76)

propylamine (133)

borneol (19)

isoborneol (96)

di-isobutyl carbinol (61)

4,6-dinitro-2-aminophenol (68)

CONDENSATIONS

Butyl benzene: benzyl chloride + propylbromide + sodium → benzene + n-butyl chloride, AlCl₃ (catalyst) (26)

DDT: chloral (or chloral hydrate) + chlorobenzene, H₂ SO₄ (catalyst) (45)

Dichloroethyl ether: ethylene chlorohydrin, H₂SO₄ (catalyst) (55)

ethylene chlorohydrin -- chlorine + ethylene, aqueous, secondary method

CONDENSATIONS - continued

Ethylamine: ethyl chloride + alcoholic ammonia (77)

Methyl benzoate: HCl through benzoic acid, methanol mixture (104)

Methyl benzothiazole: o-aminophenols + + thyl chloride (105)

Terpineol: terpin hydrate + H₂PO₄ (or dirate H₂SO₄) (135)

MISCELLANEOUS

Carbon disulfide: petroleum, natural gas, coal fractions with sulfur (30)

Benzene sulfonic acid: sulfonation (13)

Nitroanisole: chlorination and hydrolysis (119)

Pentanol: chlorination and hydrolysis (129)

Dinitrotoluene: nitrating aromatics (nitrotoluene) (69)

Nitrobenzene: nitrating aromatics (120)

Acetic acid: fermentation (methanol + CC, or destructive distillation of

hardwood) (3)

Acetaldehyde: hydration of acetylene (2)

Aldrin: diels-alder addition (bicycloheptadiene) (7)

Barbital: replacement of urea by dicyanopiamide (10)

Benzoic acid: decarboxylation of phthalic anhydride with steam

hydrolysis of benzotrichloride (14)

Benzothiazole: ring closure (o-aminothiophenols + acid chloride) (16)

MISCELLANEOUS - continued

e-caprolactam: possibly, cyclohexanone → nitrocyclohexane →

cyclohexanone oxime → e-caprolactam (29)

Guaiacol: catalytic synthesis. diazotization of o-anisidine, treat with

dilute $H_2 SO_4$ (83)

Methanol: catalytic synthesis (CO + H_2) (102)

Methyl ethyl ketone: mixed processes (109)

2-methyl-5-ethyl pyridine: possibly, paraldehydes + NH₃ (110)

(petroleum) butene + H₂ + CO. Oxo process

Methyl phenyl carbinol: Grignard, formaldehyde + benzyl grignard (114)

2-methyl propanol: Oxo process. propene $+ H_2 + CO$ (from petroleum) (115)

Triphenyl phosphate: phenol + phosphorous oxychloride. Esterification. (151)

Table 4.2.3 Categorization by Probable Manufacturing

STRACTION OF PINE GUM
SIC 0843

limonene (99)

o-cresol (43)

guaiacol (83)

methanol (102)

Standard Industrial
OF PINE GUM
Classification

1-terpineol (135) borneol (19) camphor (28) isoborneol (96)

BOTTLED AND CANNED SOFT DRINKS AND CARBONATED WATERS SIC 2086

n-docosane (72)
eicosane (74)
n-tridecane (149)
tetradecane (140)

pentadecane (127)
octadecane (122)
hexadecane (91)

BROAD WOVEN FABRIC MILLS, MAN-MADE FIBER AND SILK SIC 2221

e-caprolactam (29) 2,4,6-trichlorophenol (148) trichloroethylene (146) trichiorobenzene (143) tetrachloroethylene (139) propylbenzene (134) propylamine (133) propanol (132) methyl benzoate (104) dibuty! phthalate (51) tetradecane (140) 2-hydroxyadiponitrile (92) methylpropanal (115) borneol (19) dichloroethyl ether (55) bis-chloroisopropyl ether (38) diethy! phthalate (57) methyl naphthalene (112)

ci-2-methyl-4-ethyl dioxolane (80) trans-2-methy-4-ethyl dioxolane (81) dieldrin (56) trichlorobiphenyl (144) te rachlorobiphenyl (137) pentachlorobiphenyl (125) tridecane (149) ethylene dichloride (59) vinyl benzene (153) chioroform (36) acetophenone (5) chlorobenzene (33) dishlorobenzene (57) to uene (142) etayl benzene (78) nachthalene (118) dodecane (73)

WOOD PRESERVING SIC 2491

trichlorophenol (148)
o-cresol (43)
methyl naphthalene (112)
dimethyl phenol (65)
naphthalene (118)
acenaphthylene (1)
pentachlorophenol (126)
1-terpineol (135)

PAPER MILLS, EXCEPT BUILDING PAPER MILLS, PULP MILLS SIC 2611 & SIC 2621

limonene (135) n-tridecane (149) tetradecane (140) 1-terpineol (99) pentadecane (127) n-undecane (152) acetone (4) octadecane (122) 2-methylpropanal (115) methylene chloride (117) propanol (132) carbon disulfide (30) diethyl phthalate (57) n-docosane (72) eicosane (74) methyl benzoate (104) behenic acid, methyl ester (11) chloroform (36) acetic acid (3) borneol (19) dodecane (73) camphor (28) dimethyl sulfoxide (67) dihexyl phthalate (59) methyl palmitate (113) di(2 -ethyl hexyl) phthalate (64) methyl ester of lignoceric acid (100) methyl stearate (116) methyl ethyl ketone (109) hexachloroethane (90) methanol (102) dodecane (73) guaiacol (83) hexadecane (91)

PLASTICS MATERIALS, SYNTHETIC RESINS AND NON-VULCANIZABLE ELASTOMERS — SIC 2821

xylene (154) propanol (132)
vinylbenzene (153) propylamine (133)
triphenyl phosphate phthalic anhydride (131)
1,1,2-trichloroethylene (146) phenyl benzoate (130)
propylbenzene (134) pentanol (129)

PLASTICS MATERIALS, SYNTHETIC RESINS AND NON-VULCANIZABLE ELASTOMERS — SIC 2821 - continued

SYNTHETIC RUBBER (VULCANIZABLE ELASTOMERS) SIC 2822

vinyl benzene (153) n-tridecane (149) 1,1,2-trichloroethane (145) tetradecane (140) tetrachloroethylene (139) tetrachloroethane (138) propylamine (133) pentadecane (127) octadecane (122) nitrobenzene (120) 2-methylpropanal (115) methyl chloride (108) isopropyl benzene (98) hexadecane (91) pentachlorophenol (126) pentanoi (129)

aceta dehyde (2) acetic acid (3) acetophenone (4) acetylene dichloride (6) benzene (12) benzethiazole (16) carbon disulfide (30) carbon tetrachloride (31) hexachloro-1,3-butadiene (88) n-docosane (72) eicosane (74) ethanol (76) hexachloroethane (90) isophorone (95) methyl naphthalene (112) o-cresol (43)

PHARMACEUTICAL PREPARATIONS SIC 2834

propylamine (133)
phthalic anhydride
2-methylpropanal (115)
3-methyl butanal (107)
methanol (102)
acetic acid (3)
acetone (4)
acetophenone (5)
benzene (12)
benzoic acid (14)
bromoform (23)
camphor (28)

chloroform (36)
3-chloropyridine (42)
o-cresol (43)
2,4-dimethyl sulfoxide (67)
ethanol (76)
o-ethyltoluene (82)
guaiacol (83)
hexachlorocyclohexane (89)
hexachloroethane (90)
nitrobenzene (120)
dimethyl sulfoxide (67)
methylene chloride (117)

SOAP AND OTHER DETERGENTS, EXCEPT SPECIALTY CLEANERS SIC 2841

1-terpineol (135) borneol (19) methylene chloride (117)

naphthalene (118) benzene (12)

SPECIALTY CLEANING, POLISHING, AND SANITATION PREPARATIONS SIC 2842

trichlorofluoromethane (147) trichloroethylene (146) trichloroethane (145) trichlorobenzene (143) tetrachloroethylene (139) 2-methylpropanal (115) bis-chloroisopropyl ether (38) trichlorofluoromethane (147) dichlorodifluoroethane (53) naphthalene (118) methyl naphthalene (112) benzene (12) bromodichloromethane (22) carbon tetrachloride (31) acetone (4) bromobenzene (20)

tetrachloroethane (138)
acetylene dichloride (6)
chloroform (36)
dibromobenzene (47)
ethylamine (77)
docosane (72)
eicosane (74)
n-tridecane (149)
tetradecane (140)
pentadecane (127)
propanol (129)
octadecane (122)
hexadecane (91)
trichlorobiphenyl (144)
tetrachlorobiphenyl (137)

dichloromethane (117)

FLAVORING EXTRACTS AND FLAVORING SYRUPS, N.E.C. SIC 2087 PERFUMES, COSMETICS AND OTHER FOILET PREPARATIONS SIC 2844

1-terpineol (135) benzoic acid (4) phenylbenzoate (130) chloroform (36) 2-methylpropanal (115) chloroform (36) 3-methyl butanal (107) dibutyl phthalate (51) methyl benzoate (104) 1,2-dichloroethane (54)

FLAVORING EXTRACTS AND FLAVORING SYRUPS, N.E.C. SIC 2087 - continued PERFUMES, COSMETICS AND OTHER TOILET PREPARATIONS SIC 2844 - continued

limonene (99) 1,2-dimethoxy benzene (63) isoborneol (96) 4,6-dinitro-2-aminophenol (68) acetaldehyde (2) dioctyl adipate (70) ethanol (76) acetophenone (5) benzene (12) o-ethyltoluene (82) borneol (19) guaiacol (43) propanol (132) acenaphthylene (1) methyl stearate (116) camphor (28) 1,1,2-trichloroethylene (146)

PAINTS, VARNISHES, LACQUERS, ENAMELS AND ALLIED PRODUCTS SIC 2852

trichlorobiphenyl (144) acetylene dichloride (6) tetrachloroethylene (139) benzene (12) tetrachlorobiphenyl (137) borneol (19) propylamine (133) methyl ethyl ketone (butanone) (109) camphor (28) propanol (132) pentachlorobiphenyl (125) bis-chloroisopropyl ether (38) methyl stearate (116) dimethyl sulfoxide (67) 2-ethyl-n-hexane (79) indene (93) trichlorofluoromethane (147) acetone (4) benzothiazole (16) pentachlorophenol (126)

GUM AND WOOD CHEMICALS SIC 2861

acetone (4) methyl ester of lignoceric acid (100) methanol (102) dimethyl sulfoxide (67) l-terpineol (135)

CYLIC (COAL TAR) CRUDES, AND CYCLIC INTERMEDIATES, DYES AND ORGANIC PIGMENTS (LAKES AND TONERS) - SIC 2865

trichlorobiphenyl (144) trichlorobenzene (143) tetrachlorobiphenyl (137) propylbenzene (134) propylamine (133) propanol (132) phthalic anhydride (131) pentachlorobiphenyl (125) nitrobenzene (120) acetophenone (5) methylene chloride (117) acetone (4) benzothiazole (16) benzopyrene (15) benzothiophene (17) carbon disulfide (30) chlorobenzene (33) m-chloronitrobenzene (41) o-cresol (43) diethyl phthalate (57) ethylamine (77) o-ethyltoluene (82)

nitroanisole (119) nachthalene (118) ethyl benzene (78) acetaldehyde (2) acetic acid (3) acetylene dichloride (6) benzene sulfonic acid (13) benzoic acid (14) acenaphthylene (1) benzene (12) dichlorobenzene (52) methanol (102) 1,3-dimethylnaphthalene (64) 2,4-dimethyl phenol (65) hexachlorobenzene (87) indene (93) methyl naphthalene (112) pentachlorophenol (126) to uene (142) vinyl benzene (153) xy^{1} ene (154)

SIC 2869

Refrigerants and Aerosols

carbon tetrachloride (31) dibromochloromethane (48) dichlorodifluoroethane (53) ethanol (76) methyl chloride (108) chioroform (36) dipromodichloroethane (49) diphloromethane (117) trichlorofluoromethane (147) acetylene dichloride (6)

INDUSTRIAL ORGANIC CHEMICALS, N.E.C. SIC 2869 - continued

Organic Fuel Propellants

dibutyl phthalate (51) dimethyl phthalate (66)

diethy i phthalate (57)

Embalming Fluids

camphor (28)

Irritant Gases

chloromethyl ether (39)

Hydraulic and Transformer Fluids

hexachloro-1, 3-butadiene (88) dibromobenzene (47)

dimethylsulfoxide (67) bromoform (23) bromodichloromethane (22) tetrachlorobiphenyl (137) pentachlorobiphenyl (125)

trichlorobiphenyl (144)

Organic Solvents

carbon disulfide (30) methanol (102) limonene (99) ethylamine (77)

isophorone (95) propanol (132) propylbenzene (134) acetophenone (5) napththalene (118) bromobenzene (20)

2-methylpropanal (115) chlorobenzene (33) bis-chloroisopropyl ether (38)

methyl naphthalene (112) dichloroethyl ether (55)

Miscellaneous

dinitrotoluene (69) pentanol (129) cis-2-methyl-4-ethyl dioxolane (80) pentane (128)

trans-2-methyl-4-ethyl dioxolane (81) nitroanisole (119)

nitrobenzene (120) vinyl benzene (153)

1,1,2-trichlorothylene (146) methane (101) acetaldehyde (2) 1,1,2-trichloroethane (145)

trichlorobenzene (143) isopropyl benzene (98)

isobarneol (96) toluene (142)

tetrachloroethylene (139) hexachlorobenzene (87) tetrachloroethane (138) ethyl benzene (78)

phthalic anhydride (131) n-dodecane (73)

INDUSTRIAL ORGANIC CHEMICALS, N.E.C. SIC 2869 - continued

/= -1
enzene (12) enzene sulfonic acid (13) enzoic acid (14) romochlorobenzene (21) cetone (4) cetic acid (3)

CROP PLANTING, CULTIVATING AND PROTECTION SIC 0721 PESTICIDES AND AGRICULTURAL CHEMICALS, N.E.C. SIC 2879

triphenyl phosphate (151)	naphthalene (118)
2,4,6-trichlorophenol (148)	methyl naphthalene (112)
trichlorobenzene (143)	methyl chloride (108)
tetrachloroethane (138)	methyl benzoate (104)
phthalic anhydride (131)	acenaphthylene (1)
phenyl benzoate (130)	benzene (12)
pentachlorophenol (126)	bromoform (23)
hexachloro-1,3-butadiene (88)	2-i ydroxyadiponitrile (92)
dimethyl naphthalene (64)	dibutyl phthalate (51)
xylene (154)	trichlorobiphenyl (144)
tetrachlorobiphenyl (137)	pertachlorobiphenyl (125)
camphor (28)	dieldrin (56)
carbon disulfide (30)	2, -dimethyl phenol (65)
carbon tetrachloride (31)	4,0-dinitro-2-aminophenol (68)
chlordane (32)	endrin (75)
chlorobenzene (33)	o-sthyltoluene (82)
dichloroethyl ether (55)	heotachlor (84)
chloroform (36)	heotachlor epoxide (85)
o-cresol (43)	1,2,3,4,5,7,7-heptachloronorbornene (86)
DDE (44)	hekachlorobenzene (87)
DDT (45)	he achlorocyclohexane (89)
dibromochloromethane (48)	hexachloroethane (90)
1,4-dichlorobenzene (52)	propylamine (133)
aldrin (7)	atrazine (8)
1,2-dichloro ethane (54)	(deethyl) atrazine (9)

ADHESIVES AND SEALANTS SIC 2891

trichlorobiphenyl (144) tetrachlorobiphenyl (137) propanol (132) pentachlorobiphenyl (125)

SIC 2892

toluene (142) nitrobenzene benzene (12) dihexyl phthalate di-butyl phthalate camphor (28)
2,6-dinitrotoluene
hexachloroethane
di(2-ethyl hexyl) phthalate

CHEMICALS AND CHEMICAL PREPARATIONS, N.E.C. SIC 2899

trichlorobiphenyl (144) tetrachlorobiphenyl (137) pentachlorobiphenyl (125) bromodichloromethane (22) bromoform (23) carbon tetrachloride (31) chloroform (36) dibromochloromethane (48) dibromodichloroethane (49) hexachloroethane (90) methanol (102)

PETROLEUM REFINING SIC 2911

acenaphthylene (1)
benzene (12)
benzene sulfonic acid (13)
benzopyrene (15)
butylbenzene (26)
carbon disulfide (30)
o-cresol (43)
decane (46)
1,3-dimethyl naphthalene (64)

acetophenone (5)
o-ethyl toluene (82)
methylindene (111)
vinyl benzene (153)
napththalene (118)
nonane (121)
octadecane (122)
octade (123)
pentadecane (127)

PETROLEUM REFINING SIC 2911 - continued

pentane (128) docosane (72) n-dodecane (73) propylbenzene (134) tetradecane (140) eicosane (74) to Jene (142) ethyl benzene (78) n- ridecane 2-ethyl-n-hexane (79) undecane (152) hexadecane (91) xy ene (154) indene (93) isodecane (94) bremobenzene (20) 1-isopropenyl-4-isopropylbenzene (97) triphenyl phosphate (151) methyl phenyl carbinol (114) isopropyl benzene (cumene) (98) merhyl biphenyl (106) methane (101) di(2-ethyl hexyl) phthalate (58) methyl napththalene (112) diactyl phthalate dimethyl phenol (65) pentanol (129) 1-terpineol (135)

LUBRICATING OILS AND GREASES SIC 2992

limonene (99)

2-methyl propanal (115)

trichlorobiphenyl (144)

tetrachlorobiphenyl (137)

pentachlorobiphenyl (125)

methyl stearate (116)

naphthalene (118)

methyl ethyl ketone (109)

SIC 3111

propylamine (133) 2-:nethylpropanal (115) methylene chloride (117)

GYPSUM PRODUCTS SIC 3275

acetone (4) propanol (132) methylene chloride (117)

ELECTRONIC COMPONENTS, N.E.C. SIC 3679

vinyl benzene (153) trichlorobiphenyl (144) trichlorobenzene tetrachlorobiphenyl (127) pent chlorobiphenyl (125) carbon disulfide (30) chloroform (36)

DDE (44)

DDT (45)

PHOTOGRAPHIC EQUIPMENT AND SUPPLIES SIC 3861

acetic acid (3) benzene (12) dimethyl phthalate (66) methylene chloride (117)

MANUFACTURING INDUSTRIES, N.E.C. (Candle Mfg. and Match Mfg.) SIC 3999

n-tridecane (149) docosane (72) tetradecane (140) eicosane (74) pentadecane (127) octadecane (122) hexadecane (91) n-dodecane (73)

SIC 2813

Acetylene Mfg.

benzopyrene (15) naphthalene (118) acenaphthylene (1)

ALKALIES AND CHLORINE
SIC 2812

hexachlorobenzene (87)

hexcohloro-1,3-butadiene (88)

SIC 2819

benzopyrene (15)

PAPERBOARD CONTAINERS AND BOXES SIC 265

acetaldehyde (2) o-cresol (43)
acetone (4) propanol (132)
methyl ethyl ketone (109) diethyl phthalate (57)
methylene chloride (117)

BUILDING PAPER AND BUILDING BOARD MILLS SIC 2661

Tar Paper Mfg.

benzopyrene (15)

Particle Board Mfg.
naphthalene (118)

SIC 2063

acetic acid (3)

BROAD WOVEN FABRIC MILLS, WOOL (Including Dyeing and Finishing)
SIC 2231

dieldrin (56)

4.3 Discussion of Results

Organic chemicals exist in drinking water and their presence may pose a health hazard. Specific characterization of a few drinking water systems has taken place in the last few years, with EPA studies of 90 cities currently in progress. Characterization of organics in industrial effluents, municipal effluents, rain water and surface waters has also been undertaken. The list of 154 organic compounds found in drinking waters, which was developed by examining published data, is by no means a total accounting. For example, the 89 compounds identified in New Orleans water represents only approximately 2% by weight of the total organics in the drinking water. In general, the 154 identified compounds are the fairly volatile organics with a molecular weight less than 250.

Section 4.2 of this report summarizes the probable industrial point sources for the various organic chemicals. The following sections discuss treatment sources, non-point sources, and biodegradability of these chemicals.

4.3.1 Compounds Not Industrially Manufactured

Table 4.3.1 lists 24 compounds for which no industrial manufacture or specific industrial use was identified. However, all but two compounds can be directly or indirectly related to industrial sources. Thirteen of these compounds have been identified in industrial effluents or solid waste residues. Nine of the compounds have been indirectly related to industry as chlorinated derivatives of industrially important compounds. All the alkyl ethers, which are important solvents, cleaning agents, and pharmaceuticals, were reported as chlorine derivatives. The haloforms listed may be produced from industrial or naturally occurring organics. No information was available for 2-methyoxy biphenyl or dihydrocarvone. Dihydrocarvone is a possible degradant or co-metabolite of carvone. 2-methoxy biphenyl may be formed from benzyl phenol during pH adjustment following chlorination.

There are indications that the methyl esters of lignoceric and behenic acid, methyl benzoate, methyl palmitate and methyl stearate identified in drinking water are usually present in acid form. The GC-MS method of analysis necessitates conversion of acid forms to esters, and thus could explain the identification of the ester forms as being present in drinking water.

Chloroethoxy ether and bromoform butanal may be incorrect designations and the trimethyl-trioxo-hexahydro-triazine isomer designation is insufficient for precise characterization.

Table 4.3.1

A. Organics With No Specific Industrial Manufacture or Use

Compounds

(80 and 81)

benzopyrene (15) benzothiophene (17) thiomethylbenzothiazole (141) methyl biphenyl (106) methyl benzothiazole (105) 1-isopropenyl-4-isopropyl benzene (97) (deethyl) atrazine (9) **DDE (44)** 1,2,3,4,5,7,7-heptachloronorbornene trimethyl-trioxo-hexahydro-triazine isomer (150) 2-hydroxyadiponitrile (92) cis and trans-2-ethyl-4-methyl-dioxolane fiberalass mfg. waste

Possible Sources

petro:eum and coal wastes coke wastes petro eum and coal wastes petrc eum and coal wastes petro'eum and coal wastes petroleum wastes pesticide mfg. waste and degradation of atrazine pesticide mfg. waste and degradation of DDT pesticide mfg. waste pesticide mfg. waste and degradation of s-triazine pesticides adiponitrile mfg. waste

Possible Chlorinated Derivatives of Industrial Compounds

bromophenyl phenyl ether (25) diphenyl ether b-chloroethyl methyl ether (35) ethy, methyl ether chloromethyl ether (39) dimethyl ether chloromethyl ethyl ether (40) ethy methyl ether *bromodichloromethane (22) methyl carbonyl organics bromoform butanal (24) methyl carbonyl organics *dibromochloromethane (48) methyl carbonyl organics dibromodichloroethane (49) ethy ene, ethane *1,1,3,3-tetrachloroacetone (136) acetone

^{*}Compounds may be present in drinking water without upstream industrial discharges.

4.3.2 Compounds Which May Be Formed During Chlorination

Table 4.3.2 lists the compounds which may be produced during chlorination of drinking water. Several of these compounds have been directly related to chlorination processes. Compounds such as carbon tetrachloride and benzene hexachloride are not listed because the requirements for their formation are so rigorous that changes of formation during water treatment are negligible. Recent studies of chlorination (MCA 1972, Glaze 1975) have shown that most organic compounds may be chlorinated under treatment conditions. Aromatics, phenols, ethers, unsaturated alkanes, aldehydes, and ketones are readily attacked, and of these, phenol and benzene are especially succeptible. This may explain why these widely used materials have not been identified in drinking water while several chlorinated phenols and benzenes have been identified. Long chain saturated alkanes and esters are quite resistant to chlorination. Table 4.3.3 shows the chlorinated organics which result from chlorination of a variety of starting compounds. Many of these are not on the list of identified compounds but they are presented here as indications of the potential for formation of halogenated organics.

Table 4.3.2 Compounds Which May Be Formed by Chlorination

acetylene dichloride (6) bromobenzene (20) bromochlorobenzene (21) bromodichloromethane (22) bromoform (23) bromoform butanal (24) bromophenyl phenyl ether (25) butyl bromide (27) 1,2-bis-chloroethoxy ethane (34) b-chloroethyl methyl ether (35) chloroform (36) chlorohydroxy benzophenone (37) bis-chloroisopropyl ether (38) chloromethyl ether (39) chloromethyl ethyl ether (40) m-chloronitrobenzene (41) 3-chloropyridine (42) dibromobenzene (47) dibromochloromethane (48) dibromodichloroethane (49)

1,4-dichlorobenzene (52) dichlorodifluoroethane (53) 1,2-dichloroethane (54) dichloroethyl ether (55) hexachloro-1,3-butadiene (88) hexachloroethane (90) methyl chloride (108) methylane chloride (117) octyl chloride (124) pentachlorobiphenyl (125) 1,1,3,3-tetrachloroacetone (136) tetrachlorobiphenyl (137) tetrackloroethane (138) tetrachloroethylene (139) trichlorobenzene (143) trichlerobiphenyl (144) 1,1,2-trichloroethane (145) 1,1,2-trichloroethylene (146) trichlarofluoromethane (147) 2,4,6-trichlorophenol (148)

Table 4.3.3 Starting Compounds and Possible Resultant Chlorination Products (MCA, 1972)

Starting Compound	Chlorinated Product			Chlorinated Product	
phenol	ortho and para-chlorophenol 2,4-dichlorophenol 2,6-dichlorophenol 2,4,6-trichlorophenol (148) non-arcmatic oxidation products				
m-cresol	2-chlor -3 -methylphenol 4-chloro-3-methylphenol 6-chloro-3-methylphenol 2,4-dichloro-3-methylphenol 2,6-dichloro-3-methylphenol 4,6-dichloro-3-methylphenol 2,4,6-trichloro-3-methylphenol non-aromatic oxidation products				
hydroquinone	para-benzoquinone non-aromatic oxidation products				
aniline	ortho and para-chloroaniline 2,4 and 2,6-dichloroaniline 2,4,6-trichloroaniline non-aromatic oxidation products				
di methy la mi ne	n-chloro-dimethylamine oxidation products				

4.3.3 Compounds Formed During Sewage Treatment

Biological degradation of waste waters during sewage treatment either completely or partically breaks down many organic compounds. Table 4.3.4 lists the compounds identified in drinking water which may be formed during biological activities in sewage. Variations in sewage treatment procedures affect the amount of organic compounds released to surface waters. Incineration or landfilling of sludges releases relatively small amounts of organics. However, sewer sludge digestion liquor may contain many organic compounds which are discharged with the liquor. When final effluents are chlorinated, some of the compounds listed in Table 4.3.2 may also be

found. The differing chlorination conditions during sewage treatment result in the formation of fewer organic compounds than drinking water chlorination. Table 4.3.5 is a partial listing of compounds which have actually been identified in sewage treatment plant effluent.

Table 4.3.4 Compounds Which May Be Formed During the Biological Phase of Sewage Treatment

acetaldehyde (2) ethylamine (77) acetic acid (3) methane (101) acetone (4) methanol (102) acetophenone (5) 3-methyl butanal (107) (deethyl) atrazine (9) methyl ethyl ketone (109) benzene (12) methyl phenyl carbinol (114) benzoic acid (14) 2-methyl propanal (115) borneol (19) methyl stearate (116) isoborneol (96) pentanol (129) carbon disulfide (30) propanol (132) o-cresol (43) propylamine (133) 2,4-dimethyl phenol (65) 1-terpineo! (135) 2,6-dinitrotoluene (69) trimethyl-trioxo-hexahydro-triazine isomer (150) ethanol (76)

Table 4.3.5 Compounds Positively Identified in Sewage Treatment Plant Effluents

acetone (4) dieldrin (56) methylene chloride (117) benzene hexachloride (87) chloroform (36) DDE (44) trichloroethane (145) pentachlorophenol (126) trichloroethylene (146) hexachloroethane (90) tetrachloroethylene (139) toluene (142) dichlorobenzene (52) ethyl benzene (78) trichlorobenzene (143) indene (93) DDT (45) benzoic adid (14) trichlorobiphenyl (144) phthalic chydride (131) tetrachlorobiphenyl (137) o-cresol 43) pentachlorobiphenyl (125)

4.3.4 Organic Compounds as Refractory Human Metabolites

Few of the organic compounds identified in drinking water have been specifically related to human metabolite sources. However, there are many metabolic pathways common to humans, other animals and micro-organisms. The compounds which may be formed during biodegradation of organics in sewage or in landfills (Table 4.3.4) may be similarly degraded by human organisms, provided the right precursor is ingested. Specifically, barbital, acetaldehyde, acetic acid, acetone, ethanol, ethylamine, and 3-methyl butanal, are human metabolites which have been identified in drinking water. Barbital is a drug related biodegradant, and the others are metabolic intermediates obtained from a variety of st bstrates.

4,3.5 Landfill Leachate

It is difficult to characterize landfill leachate because uniform, representative samples are often difficult to obtain. In most instances, water percolates vertically through a landfill and the soils below until it reaches a water table or bedrock. Leachate which reaches bedrock flows downward along its surface and may then disappear through cracks in the bedrock, between layers of strata, or may eventually reach a water table or reappear on the surface.

Most leachate analysis has been accomplished on improperly operated landfills. For example, the leachate from an open dump with a slow moving streamlet passing through it has been characterized. Table 4.3.6 lists drinking water organics which have been identified in landfill leachate.

Table 4.3.6 Organic Compounds Identified in Landfill Leachate

* cresol (43) * methyl naphthalene (112) * dimethyl naphthalene (64) * methyl biphenyl (106) * diethyl phthalate (57) * dibutyl phthalate (51) di (2-ethylhexyl)phthalate decane (46) docosane (72) dodecane (73) eicosane (74) 2-ethyl-n-hexane (79) hexadecane (91) isodecane (94) nonane (121) octadecane (122)	(58)	pentadecane (127) pentane (128) tetradecane (140) tridecane (149) undecane (152) * benzothiazole (16) camphor (28) 1-terpineol (135) propylbenzene (134) naphthalene (118) ethyltoluene (82) ethylbenzene (78) dimethylphenol (65) pentanol (129) acetophenone (5) benzopyrene (15)
octane (123)		butyl benzene (26)

^{*}Compounds identified in leachate from industrial wastelandfill.

July Typical Chemical Reactions in Air and Water

The atmosphere contains many reactive molecules (usually one to six carbon volatiles and their derivatives, and gaseous molecules such as Cl₂, F₂, Br₂, NO, NO₂. NH₃, H₂O, SO₂, etc.). With these substances, sunlight and other types of radiation, many organic compounds may be formed. The atmospheric mechanism is generally free radical. Free radical reactions with propanal will produce acetal-dehyde and formaldehyde. Oxidation of propane and isobutane produces acetone. Oxidation of olefins produces methyl ethyl ketone, 2-methyl propanal, and other compounds. Alkyl radicals can undergo disproportionation and recombination reaction to form compounds such as formaldehyde, methane, methyl ethyl ether, and methanol. Formaldehyde and HCl in moist air will react to form chloromethyl ether. Atmospheric halogenations can form most of the halogenated compounds listed. These compounds may be "washed" from the atmosphere and reenter surface waters by rainfall and eventually reach drinking water supplies.

A common waterborne chemical reaction is chlorination of organics during sewage treatment or drinking water purification. However, chlorine disinfection is also an oxidative process. Oxidation by aqeuous hypochlorite, like chlorine substitution, does not occur readily with simple saturated cliphatic hydrocarbon chains. A point of attack is needed where some sort of substitution or unsaturation is already present. Alcoholic, aldehydic, carbohydrate types of materials, those for which hydrolysis to hydroxylated substances can take place and compounds with sulfhydryl groups or other reduced sulfur linkages are all classes of compounds subject to oxidation by aqueous hypochlorite. In addition to oxidation; there is the possibility of forming chlorinated oxidized products of this reaction especially if the oxidation of the organic compound is not complete to carbon dioxide, water and hydrochloric acid.

Other waterborne reactions include interaction with inorganics, such as heavy metals, condensations, rearrangements and hydrolysis on active surfaces of suspended particulates. Also, adsorption and absorption interactions occur on lipophilic surfaces.

4.3.7 Biodegradability

Table 4.3.7 summarizes the biodegradability of the organics studied in the present project. The refractory chemicals (category 5) include most of the highly chlorinated compounds and insecticides, heterocyclic and polynuclear ring compounds, and phthalate esters. These are not readily susceptible to biological treatment; they must be concentrated by physical-chemical methods and then incinerated, or otherwise properly disposed. These chemicals are carried into water supplies from diverse sources and by runoff (usually on particulate matter since most are lipophilic chemicals). Lagooning can be effective, though filtration and ozonolysis are preferred treatment methods for trace pollutants. Regulation of chemical use is a possible

method of control; an example would be the use of biodegradable adipate ester plasticizers in place of the highly refractory phthalata esters now being used.

The rest of the chemicals (categories 1, 2, 3 and 4), including long chain alkanes, saturated hydrocarbons, alkyl and aryl esters, aliphatic amines, carboxylic acids, and alkyl aldehydes and ketones are susceptible to biodegradation in varying degrees. The category 4 compounds are very difficult to degrade and may require specially acclimated cultures or special environments. Nevertheless, biological treatment of these compounds is possible and would probably cost less than such physical-chemical treatments as carbon adsorption or combined filtration and ozonolysis. These compounds are resistant enough to pas through a normal municipal waste treatment system in appreciable amounts. The remaining compounds are biodegradable in varying degrees.

A number of factors affect biodegradability in ary natural environment; these include such extrinsic factors as moisture, pH, and degree of aeration but also the intrinsic factors like chemical structure and water solubility. No single system of classification will apply in all cases because so much depends on adaptation of the receiving environment. If soil, sewage, or natural waters receive consistent dosages of the chemicals so that an acclimated microbial flora develops, degradation may be fairly rapid even for compounds that would otherwise be classed as "difficult to degrade". The ease with which an acclimatized environment is established (or the extent of the lag before active degradation begins) is, therefore, another important factor.

An example of this situation can be found in reference 196. Acetone in both acclimated and unacclimated sludge is rapidly biodegraded. Ethylene glycol, however, has varying patterns of biodegradability depending on whether it is in an acclimated or unacclimated environment. If one were to rely only on 5-day BOD data with unacclimated microorganisms, it appears that ethylene glycol may not be as readily degraded as acetone. However, after 16 cays of incubation, the reverse appears to be true. Both compounds are actually in category 1 (easily biodegraded). It should be noted that for some other chemicals, weeks or months are required to build up acclimatized environments at which point biodegradation is facilitated.

With respect to organic compounds in general, degradation will occur most rapidly in sewage and least rapidly in water, where the rates will be limited by concentration of microorganisms, low temperatures, and sometimes availability of accessory nutrients such as phosphorus.

Table 4.3.7 Biodegradability of Organics Identified in Drinking Water

Refractory Compounds (Category 5)

aldrin (7) heptachlor (84) benzopyrene (15) heptachlor epoxide (85) benzothiazole (16) 1,2,3,4,5,7,7-heptachloronorbornene (86) benzothiophene (17) hexachlorobenzene (87) benzyl butyl phthalate (18) hexachloro-1, 3-butadiene (88) bromochlorobenzene (21) hexachlorocyclohexane (89) bromoform butanal (24) hexach:oroethane (90) bromophenyl phenyl ether (25) methyl benzothiazole (105) chlordane (32) pentachlorobiphenyl (125) chlorohydroxy benzophenone (37) pentachlorophenol (126) bis-chloroisopropyl ether (38) 1,1,3,3-tetrachloroacetone (136) m-chloronitrobenzene (41) tetrachlorobiphenyl (137) **DDE (44)** thiomethylbenzothiazola (141) **DDT** (45) trichlorobenzene (143) dibromobenzene (47) trichlorobiphenyl (144) dibutyl phthalate (51) trichlorofluoromethane (147) 1,4-dichlorobenzene (52) 2,4,6-:richlorophenol (148) dichlorodifluoroethane (53) triphen/l phosphate (151) dieldrin (56) bromodichloromethane (22) diethyl phthalate (57) bromoform (23) di (2-ethylhexyl) phthalate (58) carbon tetrachloride (31) dihexyl phthalate (59) chloroform (36) di-isobutyl phthalate (62) chloromochloromethane (48) dimethyl phthalate (66) dibromodichloroethane (49) 4,6-dinitro-2-aminophenol (68) tetrachioroethane (138) dipropyl phthalate (71) 1,1,2-trichloroethane (145) endrin (75)

Table 4.3.7 Biodegradability of Organics Identified in Drinking Water – continued

Very Difficult to Degrade Compounds (Category 4)

```
acenaphthylene (1)
                                          cis-2- >thyl-4-methyl-1,3-dioxolane (80)
                                          trans-3-ethyl-4-methyl-1,3-dioxolane (81)
atrazine (8)
(deethyl) atrazine (9)
                                          guaiacol (83)
barbital (10)
                                          2-hydroxyadiponitrile (92)
borneol (19)
                                          isophorone (95)
bromobenzene (20)
                                          inden (93)
camphor (28)
                                          isoborneol (96)
chlorobenzene (33)
                                          isopropenyl-4-isopropyl benzene (97)
                                          2-methoxy biphenyl (103)
1,2-bis-chloroethoxy ethane (34)
b-chloroethyl methyl ether (35)
                                          methy biphenyl (106)
chloromethyl ether (39)
                                          methy chloride (108)
                                          methy indene (111)
chloromethyl ethyl ether (40)
                                          methy ene chloride (117)
3-chloropyridine (42)
                                          nitroanisole (119)
di-t-butyl-p-benzoquinone (50)
                                          nitrobenzene (120)
dichloroethyl ether (55)
                                          tetrachloroethylene (139)
dihydrocarvone (60)
                                          1,1,2-trichloroethylene (146)
dimethyl sulfoxide (67)
                                          trimethyl-trioxo-hexahydro-triazine isomer
2,6-dinitrotoluene (69)
                                            (1.50)
```

Difficult to Degrade Compounds (Category 3)

```
acetylene dichloride (6)
                                         limonene (99)
behenic acid, methyl ester (11)
                                         methyl ester of lignoceric acid (100)
benzene (12)
                                         methone (101)
benzene sulfonic acid (13)
                                         2-methyl-5-ethyl-pyridine (110)
butyl benzene (26)
                                         methy naphthalene (112)
butyl bromide (27)
                                         methy i palmitate (113)
e-caprolactam (29)
                                         methy phenyl carbinol (114)
carbon disulfide (30)
                                         methyl stearate (116)
o-cresol (43)
                                         naphtralene (118)
decane (46)
                                         nonare (121)
1,2-dichloroethane (54)
                                         octora (123)
1,2-dimethoxy benzene (63)
                                         octyl chloride (124)
1,3-dimethyl naphthalene (64)
                                         penfone (128)
1,4-dimethyl phenol (65)
                                         phen: I benzoate (130)
dioctyl adipate (70)
                                         phthalic anhydride (131)
n-dodecane (73)
                                         propyibenzene (134)
ethyl benzene (78)
                                         1-tersineol
2-ethyl-n-hexane (79)
                                         toluene (142)
o-ethyltoluene (82)
                                         vinyl benzene (153)
isodecane (94)
                                         xylene (154)
isopropyl benzene (98)
```

Table 4.3.7 Biodegradability of Organics Identified in Drinking Water – continued

Compounds Degraded Without Much Difficulty (Category 2)

acetophenone (5)	3-methyl butanal (107)
benzoic acid (14)	2-methylpropanol (115)
di-isobutyl carbinol (61)	octadecane (122)
docosane (72)	pentadecane (127)
eicosane (74)	propylamine (133)
ethylamine (77)	tetradecane (140)
hexadecane (91)	n-tridecane (149)
methanol (102)	n-undecane (152)
methyl benzoate (104)	, ,

Easily Degraded Compounds (Category 1)

acetaldehyde (2)	methyl ethyl ketone (109))
acetic acid (3)	pentanol (129)	
acetone (4)	propanol (132)	
ethanol (76)		

APPENDIX A

ORGANIC COMPOUNDS IDENTIFIED IN DRINKING WATERS
IN THE U.S. (AS OF 11/25/74),
U. S. ENVIRONMENTAL PROTECTION AGENCY,
CINCINNATI, OHIO

APPENDIX A

"Organic Compounds Identified in Drinking Waters in the U.S. (as of 11/25/74)," U.S. Environmental Protection Agency, Cincinnati, Ohio

acenaphthylene (1)	chloroform (36)
acetaldehyde (2)	chlorohydroxy benzophenone (37)
acetic acid (3)	bis-chlorpisopropyl ether (38)
acetone (4)	chloromethyl ether (39)
acetophenone (5)	chlorome:hyl ethyl ether (40)
acetylene dichloride (6)	m-chloronitrobenzene (41)
aldrin (7)	3-chloro∋yridine (42)
atrazine (8)	o-cresol (43)
(deethyl) atrazine (9)	DDE (44)
barbital (10)	DDT (45)
behenic acid, methyl ester (11)	decane (46)
be nzene (12)	dibromobenzene (47)
be nzene sulfonic acid (13)	dibromochloromethane (48)
benzoic acid (14)	dibromoa chloroethane (49)
benzopyrene (15)	di-t-butyl-p-benzoquinone (50)
be nzothiazole (16)	dibutyl phthalate (51)
Sanzothiophene (17)	1,4-dichlorobenzene (52)
benzyl butyl phthalate (18)	dichlorodifluoroethane (53)
Forneol (19)	1,2-dichloroethane (54)
br omobenzene (20)	dichloroethyl ether (55)
bromochlorobenzene (21)	diohloro m ethane (same as 117)
bromodichloromethane (22)	dieldrin (56)
bromoform (23)	diethyl phthalate (57)
bromoform butanal (24)	di (2-ethylhexyl) phthalate (58)
bromophenyl phenyl ether (25)	dihexyl phthalate (59)
tr utanone (same as 109)	dihydrocurvone (60)
butyl benzene (26)	di-isobutyl carbinol (61)
butyl bromide (27)	di-isobutyl phthalate (62)
でス ロース camphanol (same as 96)	1,2-dimethoxy benzene (63)
camphor (28)	dimethyl-benzene (same as 154)
-caprolactam (29)	1,3-dimethyl naphthalene (64)
carbon disulfide (30)	2,4-dimethyl phenol (65)
carbon tetrachloride (31)	dimethy: phthalate (66)
chlordane (32)	dimethy: sulfoxide (67)
hlorobenzene (33)	4,6-dini ro-2-aminophenol (68)
hleredibremomethane (same as 48)	2,6-dini rotoluene (69)
, 2-bis-chloroethoxy ethane (34)	dioctyl cdipate (70)
chloroethoxy-ether (incomplete	dipropyl phthalate (71)
characterization)	docosane (72)
is-2-chloroethyl ether (same as 55)	
-chloroethyl methyl ether (35)	

"Organic Compounds Identified in Drinking Waters in the U.S. (as of 11/25/74)", U.S. Environmental Protection Agency, Cincinnati, Ohio (continued)

n-dodecane (73) eicosane (74) endrin (75) ethanol (76) ethylamine (77) ethyl benzene (78) 2-ethyl-n-hexane (79) cis-2-ethyl-4-methyl-1, 3-dioxolane (80) trans-2-ethyl-4-methyl-1, 3-dioxolane (81)	methyl benzothiazole (105) methyl biphenyl (106) 3-methyl butanal (107) methyl chloride (108) methyl ethyl ketone (109) 2-methyl-5-ethyl-pyridine (110) methylindene (111) methyl naphthalene (112) methyl palmitate (113)
o-ethyltoluene (82)	methyl phenyl carbinol (1-phenylethanol)
guaiacol (83)	(114)
heptachlor (84)	2-methylpropanal (115)
heptachlor epoxide (85)	methyl stearate (116)
1,2,3,4,5,7,7-heptachloronorbornene (86)	methylene chloride (117)
hexachlorobenzene (87)	naphthalene (118)
hexachloro-1,3-butadiene (88)	nitroanisole (119)
hexachlorocyclohexane (89)	nitrobenzene (120)
hexachloroethane (90)	nonane (121)
hexadecane (91)	octadecane (122)
2-hydroxyadiponitrile (92)	octane (123)
indene (93)	octyl chloride (124)
isodecane (94)	pentachlorobiphenyl (125)
isophorone (95)	pentachlorophenol (126)
isoborneol (96)	pentadecane (127)
isopropenyl-4-isopropyl benzene (97)	pentane (128)
isopropyl benzene (98)	pentanol (129)
limonene (99)	phenyl benzoate (130)
methyl ester of lignoceric acid (100)	phthalic anhydride (131)
p- menth-1-en-8-~1 (same as 135)	proponol (132)
methane (101)	propylamine (133)
methanol (102) 2-methoxy biphenyl (103)	propylbenzene (134)
methyl benzoate (104)	1-terpineol (135) 1,1,3,3-tetrachloroacetone (136)
memyi benzoule (104)	1,1,0,5-leffacifioroacerone (130)

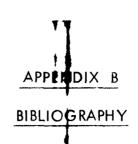
"Organic Compounds Identified in Drinking Waters in the U.S. (as of 11/25/74)", U.S. Environmental Protection Agency, Cincinnati, Ohio (continued)

```
tetrachlorobiphenyl (137)
tetrachloroethane (138)
tetrachloroethylene (139)
tetradecane (140)
thiomethylbenzothiazole (141)
toluene (142)
trichlorobenzene (143)
rrichlorobiphenyl (144)
1,1,2-trichloroethane (145)
1,1,2-trichloroethylene (146)
trichlorofluoromethane (147)
trichloromethane (same as 36)
2,4,6-trichlorophenol (148)
n-tridecane (149)
trimethyl-trioxo-hexahydro-triazine isomer (150)
triphenyl phosphate (151)
n-undecane (152)
vinyl benzene (153)
xylene (154)
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APPENDIX B

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APPENDIX C

	-
	1

	.5 1 1	lomenclature: 83-32-9
Cla	iss:	unsubstituted aromatic
Sou	ırces	2:
٨.		dustry Point Source (Water and Air)
	i,	Manufacturers: Petroleum refining: shale oil processing; coal tar distilling.
	2	Users: Dye mfg.; plastics mfg.; insecticide and fungicide mfg.
	<i>.</i> .	Osers. Dye mig., prastics mig., moserces and congressions.
	3.	Gross estimate of annual discharge: 200 tons (method 3).
В.	Tre	eatment Point Source (Water and Air)
	1.	Waste treatments/disposal (sewage and solids): Approximately 50% removed duri
		traditional sewage treatment. Compound not likely formed during sewage treatme
		or solid waste disposal.
	2.	Drinking water treatment (e.g., chlorination): Removal efficiency-low.
_	No	on-Point Source:
.	_	Natural Coal tar.
	2.	Chemical reactions None identified.
	3.	Solid waste leachate Present in solid residues of petroleum and coal tar refining.
		aradually migrate through soils to ground water.
	4.	Man caused non-point source Combustion of tobacco; constituent in asphalt.
Bio	dear	radability (persistence): Moderately persistent; very difficult to degrade biologica
		egory 4).

1.	Cher CAS	mical: <u>acetaldehyde</u> 5 Nomenclature:	2. Structure: H-C-C=0
3.	Class	ss: aldehyde (alkane derivative)	
	Sour	rces:	
		Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical mfg.	
	;	2. Users: Organic chemical mfg. (acetic acid, n-butan pentaerythrital etc.); perfumes, flavors, aniline dye silvering mirrors; hardening gelatin fibers.	es; plastics, synthetic rubbers mfg.;
	:	3. Gross estimate of annual discharge: 10,000 tons (mo	nethod 1).
	B. '	Treatment Point Source (Water and Air)	,
		1. Waste treatments/disposal (sewage and solids): Hydrovields acetaldehyde, which in turn is readily degrad of solid biological wastes produces acetaldehyde, who biological organisms.	ded to CO ₂ and H ₂ O. Decomposition
		2. Drinking water treatment (e.g., chlorination): Con a result of drinking water treatment. Removal effici approximately 50%.	
	- •	Non-Point Source: 1. Natural Metabolic intermediate in higher plants; decomposition in body; by-product of most hydrocart	
		 Chemical reactions Nitrogen oxides (air) + Hydrocal light aldehydes H_BO aldehyde (aq.) Solid waste leachate Compound will leach from biol 	arbons (aromatic & aliphatic)
		sludges where acetaldehyde is unrecovered; should be	be efficiently degraded during migra-
	•	4. Man caused non-point source Vehicle exhaust; oper and incineration of gas, fuel, oil and coal, evepore	
5.		degradability (persistence): Readily biodegraded in soils category 1).	
6.	Effe	ctive treatment method: Biological treatment (95%).	

C	100.	carboxylic acid
	rces lno	: lustry Point Source (Water and Air)
Λ.		Manufacturers: Beetsugar mfg.; winery; vinegar mfg; textile mills; wood distilla-
	•	tion plants.
	_	
	2.	Users: Food processing plants; organic chemical mfg; nylon and fiber mfg; dyestuff
		and pigments mfg; vitamins, antibiotics, hormones mfg; rubber mfg; photographic
		chemicals mfg; mfg. ester solvents; mfg. plastics.
	3.	Gross estimate of annual discharge: 30,000 tans (method 1).
В.	Tre	eatment Point Source (Water and Air)
•		Waste treatments/disposal (sewage and solids): <u>Biological sewage treatment produ</u>
	-	acetic acid which is readily degraded. Decomposition of solid biological wastes pr
		duces acetic acid which is readily metabolized by living organisms.
	_	
	2.	Drinking water treatment (e.g., chlorination): Compound would not be produced
		a result of drinking water treatment. Removal efficiency during drinking water trea
C	No	a result of drinking water treatment. Removal efficiency during drinking water treatment approximately 50%.
c.		a result of drinking water treatment. Removal efficiency during drinking water treatment approximately 50%. on-Point Source:
c.		a result of drinking water treatment. Removal efficiency during drinking water treatment approximately 50%.
с.		a result of drinking water treatment. Removal efficiency during drinking water treatment approximately 50%. on-Point Source: Natural Both plants and animals as normal metabolite.
с.	1.	a result of drinking water treatment. Remova! efficiency during drinking water treatment approximately 50%. on-Point Source:
c.	2.	ment approximately 50%. on-Point Source: Natural Both plants and animals as normal metabolite. Chemical reactions Acetaldehyde acetic acid; acetone acetic acid.
c.	2.	ment approximately 50%. ment Source: Natural Both plants and animals as normal metabolite. Chemical reactions Acetaldehyde acetic acid; acetone acetic acid. Solid waste leachate Compound will leach from biological disposal areas, should be
c.	 2. 3. 	ment approximately 50%. On-Point Source: Natural Both plants and animals as normal metabolite. Chemical reactions Acetaldehyde acetic acid; acetone acetic acid. Solid waste leachate Compound will leach from biological disposal areas, should be efficiently degraded during migration through soils. Man caused non-point source Domestic use of vinegar; photographic film develop
•	 2. 3. 4. 	a result of drinking water treatment. Removal efficiency during drinking water treatment approximately 50%. On-Point Source: Natural Both plants and animals as normal metabolite. Chemical reactions Acetaldehyde acetic acid; acetone acetic acid. Solid waste leachate Compound will leach from biological disposal areas, should be efficiently degraded during migration through soils. Man caused non-point source Domestic use of vinegar; photographic film develop lab use.
Bio	 2. 3. 4. 	a result of drinking water treatment. Removal efficiency during drinking water treatment approximately 50%. on-Point Source: Natural Both plants and animals as normal metabolite. Chemical reactions Acetaldehyde acetic acid; acetone acetic acid. Solid waste leachate Compound will leach from biological disposal areas, should be efficiently degraded during migration through soils. Man caused non-point source Domestic use of vinegar; photographic film develop lab use. Tadability (persistence): Readily biodegraded in soils, sewage, natural water systems
Bio	 2. 3. 4. 	ment approximately 50%. On-Point Source: Natural Both plants and animals as normal metabolite. Chemical reactions Acetaldehyde acetic acid; acetone acetic acid. Solid waste leachate Compound will leach from biological disposal areas, should be efficiently degraded during migration through soils. Man caused non-point source Domestic use of vinegar; photographic film develop

1.			omenclature: 67-64-1 2. Structure: H H H H H H H H H H H H H H H H H H H
3.	Clo	ISS:	ketone (alkane derivative)
_		rces	
•			lustry Point Source (Water and Air)
			Manufacturers: Organic chemical industry.
		2.	Users: Mfg. smokeless powder; paints, varnishes, lacquers mfg.; organic chemical
			mfg.; pharmaceuticals mfg; sealants and adhesives mfg; solvents for cellulose acetate,
			nitrocellulose, acetylene; formulation and packaging of products.
		3	Gross estimate of annual discharge: 40,000 tons (method 1).
	В.	Tra	eatment Point Source (Water and Air)
	υ.		Waste treatments/disposal (sewage and solids): During biological treatment of sewage,
		••	acetone is a decomposition, intermediate which is readily degraded in efficient sys-
			tems. Operation of sewage treatments over optimal capacity increases the potential
			for acetone discharge. Decomposition of solid wastes (biological) produces acetone
			which is in turn readily degraded air emissions due to incineration of sludges/slurries
		-	containing acetone. Combustion efficiency is greater than 99.99%. Presence of other
			waste slurry/sludge constituents can decrease this efficiency.
			Surface spreading of waste slurries/sludges containing acetone residuals (less than 1-
			10%) will release acetone to soils. Most (approx. 80%) will be released to atmosphere
,			where it will be available for photochemical reactions or will be returned to water-
			ways by rain.
		2.	Drinking water treatment (e.g., chlorination): Compound would be product as a
			result of traditional drinking water purification procedures, (removal efficiency during water treatment ~40%).
	_	N.	
	С.		on-Point Source:
		١.	Natural Normal microcomponent in blood and urine; minor constituent in pyroli- gneous acid; biodegradation: intermediate in isopropanol breakdown; oxidation of
			alcohols and humic substances.
		2	Chemical reactions Oxidation of propane; oxidation of isobutane; photooxidation
		۷.	of isobutylene.
		2	Solid waste leachate Compound may leach from biological disposal areas, land-
		٥.	filled sludges in which acetone was a process solvent or unrecovered reactant, acetone
			is readily degraded during migration through soils, however, the presence of other
			constituents in industrial waste leachate would affect biodegradability, generally
			reducing efficiency of biodegradation.
		4.	Man caused non-point source General laboratory use (>80% loss to water and air),
		• •	evaporation from applied paints and coatings and other acetone containing formulations
			return to water with rain).
5	. Bi	iode	gradability (persistence): Low persistence (ger erally completely degraded in 1-2
_		•	hs) (category 1).
6	. Ei	ffect	ive treatment method; Biological waste treatment (50%); activated carbon (90%).

Class:		ketone (aryl alkane derivative)		
Sources				
		dustry Point Source (Water and Air)		
	1.	Manufacturers: Organic chemical industry; coc pro	ocessing industry.	
	2.	Users: Perfume mfg; solvent for synthesis of phas sac stuffs and corrosion inhibitors; plasticizer mfg; to pac synthesis of pharmaceuticals.		rmediate in
В.	Tre	Gross estimate of annual discharge: 50 tons (me ^x node eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): [ew		ong chain a
	•	alkyl ketones can produce acetophenone. Combistion acetophenone to the air. Operation of sewage plant phenone. Decomposition of land disposed organics (sproduces acetophenone.	n of coal tar reside above capacity r	dues releases eleases acet
	2.	Drinking water treatment (e.g., chlorination): <u>Jou</u> the degree of oxidation of phenyl methyl carbinol.	ld be produced, o	lepending or
С.	No	on-Point Source:		
	1.	Natural Oils of castoreum and labdanum resin; bud	ls of balsam popla	r; heavy oil
	2.	Chemical reactions None identified.		
-	3.	Solid waste leachate <u>Present in leachate in solid waste</u> a process solvent/unrecovered reactant.	aste in which ace	tophenone v
	4.		vaporization from	n perfumes.
Bio	degi	radability (persistence): Moderate in sewage sol ds,	not water (1 mont	h) (category

DATA DISPLAY	C1 C1
Chemical: <u>acetylene dichloride</u> CAS Nomenclature: <u>540–59–0</u>	2. Structure: H-C=C-H
Class: halogenated non-cyclic alkene	
Sources:	
A. Industry Point Source (Water and Air)	
1. Manufacturers: Organic chemicals industry.	
2. Users: Solvent for fats, phenols, camphor, et	c; retard fermentation; rubber mfg;
refrigerant; additive to dye and lacquer solution	
sensitive substances (e.g., caffeine); constitue in organic synthesis and medicine.	ent of perfumes, thermoplastics; used
in organic symmests and medicine.	
3. Gross estimate of annual discharge: 100 tons	(method 3).
 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids) treatment phase, formed during chlorination of): Not produced during biological final effluent.
2. Drinking water treatment (e.g., chlorination	n): Results from chlorination (trace).
C. Non-Point Source:	
1. Natural None	
2. Chemical reactions Ethylene + chlorine or l	hypochlorous acid → acetylene dichlo
3. Solid waste leachate Would leach from landf	
4. Man caused non-point source Evaporation from vents, refrigerants; laboratory use and medical	om dyes, coatings, perfumes; use of so
Biodegradability (persistence): <u>Difficult to degrade b</u>	
Effective treatment method: Sewage treatment (20%);	c'inking water troatment - hefere
chlorination (20%); activated carbon (90-100%).	- Thomas water treatment - before

Chemic CAS N	cal: aldrin omenclature: 309-00-2	2.	2. Structure:	e: ci	CI CH2	
Class:	halogenated cyclic alkene				CI	CI
Sources	:					
	lustry Point Source (Water and Air) Manufacturers: Pesticide mfg.					
2.	Users: Insecticide.					
	Gross estimate of annual discharge: Less than seatment Point Source (Water and Air)	ton (meth	nod 5).		
	Waste treatments/disposal (sewage and solids): or degradation of solid wastes. Released to air incinerated (e.g.,municipal refuse, sewage sli	when	wast	es contai	ning	material c
2.	Drinking water treatment (e.g., chlorination): purification.	Not f	orme	ed during	drink	ing water
	on-Point Source: Natural None					
2.	Chemical reactions None identified.					
3.	Solid waste leachate Will leach from solid was	stes of	whi	ch it is a	cons	tituent.
4.	Man caused non-point source Agricultural run	ff, la	b use	2.		
Biodegr	radability (persistence): Persistent: approximately	3 уес	irs to	degrade	(cate	egory 5).
Effectiv	ve treatment method: Activated carbon (90-100 incineration inefficient for residual concentration					

	cal: atrazine	2. Structure: C
CAS N	lomenclature:	
Class:	heterocyclic amine	CH_CHZ-HN NH-CH
Sources	s:	
	dustry Point Source (Water and Air)	
i.	Manufacturers: herbicide mfg.	
2.	Users: Agricultural industry (herbicide/plant gro	wth regulator)
B. Tre	Gross estimate of annual discharge: <u>Less than c</u> eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):	
	position of sewage or solid waste components. In	cinceration is approximately 99%
	position of sewage or solid waste components. In	cinceration is approximately 99%
	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination):	cinceration is approximately 99%
2.	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination): water treatment.	Not produced during drinking
2.	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination): water treatment. on-Point Source:	Not produced during drinking
2. C. No 1.	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination): water treatment. on-Point Source:	Not produced during drinking
2. C. No 1.	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Solid slurries and sludge	Not produced during drinking
2. C. No 1. 2. 3.	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural None. Chemical reactions None identified.	Not produced during drinking es from atrazine mfg. will leach
2. C. No 1. 2. 3. 4. Biodeg	position of sewage or solid waste components. In effective in removal. Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Solid slurries and sludge atrazine.	Not produced during drinking es from atrazine mfg. will leach

		menclature:	
las	s: <u>h</u>	neterocyclic amine	CH3-CH-HN NH
	ces:		Cn ₃
		stry Point Source (Water and Air)	
	1. /	Manufacturers: <u>Pesticide mfg.(minor constitu</u>	uest in atrazine).
	2. ī	Users: None	
	-		
		Gross estimate of annual discharge: <u>Less than</u>	one ton (method 5).
		thment Point Source (Water and Air)	
		Waste treatments/disposal (sewage and solids): and solid wastes, deethyl atrazine is expected	
	_	211a 3011a Wasies, 2011yi ariazine il expedie	
	_		
	2. 0	Orinking water treatment (e.g., chlorination)	Not expected to be formed.
		,	
	_		
		-Point Source: Natural None .	
		Natural None,	
	_		
	2. (Chemical reactions None identified.	
	3. 3	Solid waste leachate <u>Atrazine + water</u> + <u>l</u>	light → (deethyl) atrazine.
	4. Ī	Man caused non-point source <u>Water-borne at</u>	trozine in presence of light eventue
		produces deethyl atrazine. Also biodegradan dability (persistence): <u>No information (ca</u>	nt of atrazine.
	Ę	DUDDED V UPSISISIERCET No intermetion for	ategory 4 (est.)).
	Ę		
	Ę	140 mornation (ca	

		al: <u>barbital</u>	2. Structure:
CAS	S No	omenclature: <u>57-44-3</u>	CH3-H2C
Cla	ss: _	heterocyclic amine	CH_H2C
Sou			ó'
Α.		lustry Point Source (Water and Air)	
	١.	Manufacturers: Pharmaceutical mfg.	
		Users: Medicine mfg.; stabilizer for hydrogen peroxid	
		Gross estimate of annual discharge: 300 tons (meth	od 6).
В.	1.	eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): <u>Compo</u> produced as result of decomposition of sewage/solid was	•
	2.	Drinking water treatment (e.g., chlorination): Not	expected to be produced.
c.	No	on-Point Source:	
	1.	Natural None	
	2.	Chemical reactions None identified.	
	3.	Solid waste leachate Potential leachate from pharma	ceutical solid wastes containing
		Man caused non-point source General use of redicin	
Bio	degr	radability (persistence): Persistent (category 4).	

1.			cal: methylester of behenic acid 2. Structure:
	CA	S N	lomenclature: 929-77-1
3.	Clo	155:	alkyl ester $CH_3 - (CH_2)_{20} = C - 0 - CH_3$
	Sou		
	Α.	Ind	dustry Point Source (Water and Air)
		1.	Manufacturers: Mfg. and processing of carnaubc wax; seed oil processing and refining
			natural product industry.
		2.	Users: Reference standard for gas chromatography n biochemical and medical research; special synthesis intermediate for pure behenic caid.
		3.	Gross estimate of annual discharge: 100 tons (method 6).
	В.	Tre	eatment Point Source (Water and Air)
		1.	Waste treatments/disposal (sewage and solids): <u>Compound not expected to be produce</u> during biclogical decomposition of sewage/solid wastes.
		2.	Drinking water treatment (e.g., chlorination): Not produced during drinking water treatment.
	с.	No	on-Point Source:
		1.	Natural Minor constituent of most seed fasts, animal milk fats, and marine animal oils.
		2.	Chemical reactions None identified.
	•	3.	Solid waste leachate Will leach in small quartities from decomposing biological
		4.	Man caused non-point source Water-borne discharge of foods, such as milk, and
-			of domestic sewage, lab use.
5.			radability (persistence): Moderately persistent. Approx. 3-6 months to completely
	de	egra	ide (category 3).
			
6.	Effe	ectiv	ve treatment method: Biological (90%).

-	ical: benzene Nomenclature: 71–43–2	2. Structure:
Class:	unsubstituted aromatic	
Source	es:	
A. In	ndustry Point Source (Water and Air)	
1.	 Manufacturers: Petroleum refinery; solven 	t recovery plant; coal tar distillation
	coal processing; coal coking	
2.	. Users: Mfg. styrene; phenol mfg.; nylon ir	ntermediates: detergents mfg : organic
	chemicals mfg.; pesticide mfg.; plastics an	d resins mfa.: synthetic rubber mfa.:
	aviation fuel mfg.; food processing; pharma	iceuticals mfa.; dve mfa.; explosives mfa
	photographic chemicals; PCB mfg.; gasoline	e mfg.; tanning, flavors and perfumes mf
	paints and coatings mfg.	
3.	. Gross estimate of annual discharge: 100,0	00 to 1s (method 7).
B. Tr	reatment Point Source (Water and Air)	
1.	. Waste treatments/disposal (sewage and solid	ds): During biological treatment of com
	organics, benzene is an intermediate which	
	Surface spreading of sludges/slurries contain	ning benzene releases it to the air
	Incineration of sludges/slurries containing i	t will release small quantities.
2.	. Drinking water treatment (e.g., chlorination	on): Not expected to be produced.
c N	Von-Point Source:	
C. N	Natural Petroleum oils, coal tars.	
٠.	. National	
2	. Chemical reactions None identified	
4- 1	- Chemical reactions - I tolic lacinities	
3.	. Solid waste leachate Present in landfill sl	
ē	unrecovered reactant. Can be degraded du	
4.	. Man caused non-point source General lab	
	evaporation from applied paints and coating	
Biodeg	gradability (persistence): Difficult to biodegra	ide other constituents will affect
	biodegradability) (category 3),	
Effect	ive treatment method: Biological (90-100%	b); activated carbon (90-100%);
	incineration (greater than 99.99%).	

		omenclature: 98-11-3	
Clas	ss: _	sulfonic acid	
Soui	rces	:	
Α.	Ind	ustry Point Source (Water and Air)	
	1.	Manufacturers: Petroleum refining.	
	2.	Users: Dye mfg. (intermediate); accelerator in : Iky	vol resin formation;
		phenol mfg (intermediate); mig re	
	3.	Gross estimate of annual discharge: 600 tons (met	hod 6).
В.		atment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids): No	t expected to be formed during
		/ 40 1 10 1	
	2	Scinding and the book of the state of the st	
	۷٠	Drinking water treatment (e.g., chlorination): N	of expected to be formed.
С.	No	n-Point Source:	
	1.	Natural None	
	_		
	2.	Chemical reactions None identified.	
	2	Solid waste leachete a	
	٥.	Solid waste leachate <u>Potential leachate from solid</u> in sludges/slurries as unrecovered product/reastan	waste containing compound:
	4.	Man caused non-point source None. No general	
	•	None. No gereral	use of chemical except in lab
Biod	degr	adability (persistence): Difficult to degrade (categ	ory 3)
		Simon to deding to the test	M. J. M. J. A. M.
-			

		lomenclature: 65-85-0	
Cla	ıss: _	carboxylic acid	
Sou	ırces	s:	
Α.	Ind	dustry Point Source (Water and Air)	
	1.	Manufacturers: Organic chemical industry.	
	2.	Users: Food preservative; pharmaceutical and cointment, and local anaesthetics mfg.; mfg. of	
		thesis of dyestuffs and pharmaceuticals; product	
		plasticizer mfg. (to modify resins - PVC, PV ac	
	3.	Gross estimate of annual discharge: 1,000 ton	ns (method 2).
В.		eatment Point Source (Water and Air)	
-		Waste treatments/disposal (sewage and solids):	Riological courses treatment wroduce
	•	benzoic acid which readily decomposes. Decom	
		,,	•
		duces it, which is then readily metabolized. De	ecomposition of industrial sludges/siv
		from above identified users produces it.	
	2.	Drinking water treatment (e.g., chlorination): water treatment.	Potentially produced during drinking
c.	No	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive	k of wild black cherry tree, scent atives are widely distributed (gum
c.	No	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyco	k of wild black cherry tree, scent atives are widely distributed (gum
c.	No 1.	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive	k of wild black cherry tree, scent atives are widely distributed (gum
c .	No. 1.	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyc in urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial
c.	No. 1. 2. 3.	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glycin urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from sludges/slurries where it is an unreacted reactage.	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial nt.
c.	No. 1. 2. 3.	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyc in urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from sludges/slurries where it is an unreacted reactar Man caused non-point source Constituent in de	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial nt.
•	No. 1. 2. 3. 4.	Drinking water treatment (e.g., chlorination): water treatment. Dn-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyc in urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from sludges/slurries where it is an unreacted reactal Man caused non-point source Constituent in decepticals, cosmetics, food. Decomposition of p	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial nt. mestic waste. General use of pharma-lastics and resins. Lab use.
Bio	No. 1. 2. 3. 4.	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyc in urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from sludges/slurries where it is an unreacted reactar Man caused non-point source Constituent in decenticals, cosmetics, food. Decomposition of pradability (persistence): Biodegradable. Approx	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial nt. mestic waste. General use of pharma-lastics and resins. Lab use. 1-2 months for complete degradatio
Bio	No. 1. 2. 3. 4.	Drinking water treatment (e.g., chlorination): water treatment. Dn-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyc in urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from sludges/slurries where it is an unreacted reactal Man caused non-point source Constituent in decepticals, cosmetics, food. Decomposition of p	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial nt. mestic waste. General use of pharma-lastics and resins. Lab use. 1-2 months for complete degradation
Bio	No. 1. 2. 3. 4.	Drinking water treatment (e.g., chlorination): water treatment. on-Point Source: Natural Cranberries, prunes, ripe cloves, bar glands of beavers, and oil of anise seed. Derive bensoin - up to 20%; acaroid resin 4-7%); glyc in urine of herbivorous animals. Forest runoff. Chemical reactions None identified. Solid waste leachate Present in leachate from sludges/slurries where it is an unreacted reactar Man caused non-point source Constituent in decenticals, cosmetics, food. Decomposition of pradability (persistence): Biodegradable. Approx	k of wild black cherry tree, scent atives are widely distributed (gum ine derivative (hippuric acid) found biological solid waste and industrial nt. mestic waste. General use of pharma lastics and resins. Lab use. 1-2 months for complete degradatio

C		unsubstituted aromatic
	rces:	
Α.		ustry Point Source (Water and Air)
	1.	Manufacturers: Coal tar processors; petroleum refining; shale refining; processors
		and coke; kerosene processing; heat and power generation sources.
	2.	Users: Used only as a constituent in coal, petr leum, shale and kerosene.
		Gross estimate of annual discharge: 60 tons (method 6).
В.		waste treatments/disposal (sewage and solids): incineration (enclosed and open) of refuse. Not formed during biological decomposition of sewage/solid waste. Incineration of coal, petroleum products releases it to air.
	2.	Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment.
с.	No	n-Point Source:
	١.	Natural Coal tar, tobacco.
	2.	Chemical reactions None identified.
	3.	Solid waste leachate Will leach from waste sludges/slurries from coal, petroleun
		shale, and coke refining.
	7.	Man caused non-point source <u>Combustion of tepacco</u> , <u>combustion of fuels</u> . <u>Preservan off containing greases</u> , <u>oils</u> , <u>etc</u> . <u>Potentia</u> , <u>roadbed and asphalt leachate</u> .
Bio	degr	adability (persistence): Persistent chemical (category 5).

CAS N			ructure:	1 11 0
	Nomenclature: 95-16-9			
Class				ū
Source	<u>benzothiazole</u>			
	es: ndustry Point Source (Water and Air)			
	. Manufacturers: Organic chemical mfg.			
2.	. Users: Photographic dye mfg; rubber chemicals mfg.			
B. Tr	 Gross estimate of annual discharge: 300 tons (method reatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Not ment/solid waste disposal. 	produc	ed durin	g sewage tre
2.	Drinking water treatment (e.g., chlorination): Not p			drinking wa
c. N				drinking wat
C. N 1.	Ion-Point Source:			drinking wat
C. N 1.	Ion-Point Source: Natural None. Chemical reactions None identified.			
C. N 1.	Ion-Point Source: Natural None. Chemical reactions None identified.			
C. N 1. 2.	Ion-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Potentially from sludges/slurri	es in wh	nich it is	unrecovered
C. N 1. 2. 3.	Ion-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Potentially from sludges/slurri reactant or product. Man caused non-point source General photographic is roadway runoff as result of tire wear. Lab use.	es in wh	nich it is	unrecovered
C. N 1. 2. 3.	Ion-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Potentially from sludges/slurri reactant or product. Man caused non-point source General photographic in the source of	es in wh	nich it is	unrecovered
C. N 1. 2. 3.	Ion-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Potentially from sludges/slurri reactant or product. Man caused non-point source General photographic is roadway runoff as result of tire wear. Lab use.	es in wh	nich it is	unrecovered
C. N 1. 2. 3.	Ion-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Potentially from sludges/slurri reactant or product. Man caused non-point source General photographic is roadway runoff as result of tire wear. Lab use.	es in wh	nich it is	unrecovered

Chemical: <u>benzothiophene</u> CAS Nomenclature: 95-15-8	2. Structure:
CAS (4011c11c1c1c1c)	
Class: mercaptans and other sulfur organics	
Sources:	
A. Industry Point Source (Water and Air)	
1. Manufacturers: <u>Processing lignite tars.</u>	
2. Users: Present as minor contaminant in coal	products.
3. Gross estimate of annual discharge: 30 ton	ns (method 6).
 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids) treatment. Incinceration of coal and coal was air. 	ste: release small quantities to the
2. Drinking water treatment (e.g., chlorination)): Not produced.
C. Non-Point Source: 1. Natural Coal (lignite).	
2. Chemical reactions None identified.	
3. Solid waste leachate Will leach from coal-pr	ro :essing residue.
4. Man caused non-point source General use o	
D* 1 11:1:1 / *:	, :)
Biodegradability (persistence): Persistent (category	

١.			cal: benzyl butyl phthalate lomenclature:	2. Structure:
3.	Cla	ss:	phthalate ester	t-o-()
	Sou	rces Ind		С-0-(CH ₂) ₃ -CH ₃
		2.	Users: Plasticizer mfg; plastics mfg, processing, and	recycling.
	В.	Tre 1.	Gross estimate of annual discharge: 100 tons (methodeatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Com treatment/solid waste disposal, released to air during refuse, general industrial rubbish, and waste sludges duction, and other manufacturing processes above. Drinking water treatment (e.g., chlorination): not	pound not formed during sewage incinceration of municipal and slurries from plastic pro- formed during drinking water
	c.		on-Point Source: Natural None.	
	•	3.	Chemical reactions None identified. Solid waste leachate Leaches from municipal and in plastics. Man caused non-point source General use of plastic (leaches from tubings, dishes, paper, containers, etc.)	es and above listed products.
5.	_C(ompo	radability (persistence): Persistence greater than 18 m sound is degraded slowly by biological organisms and is ad concentrated by them (category 5).	os. lab chemicals, food,
6.	Effe	ectiv	ve treatment method: Activated carbon (90-100%); i	ncineration (greater than 99%).

~ 1	C'E OH
-	alcohol
	lustry Point Source (Water and Air) Manufacturers: Organic chemical industry; extraction and recovery from certain woods.
2.	Users: Frother (flotation agent); textile industry (wet processing of cotton, silk, ray wool); soap mfg. (solvent and bactericide); preservative for casein and other protein in water paints; mfg. of camphor; perfume and incense mfg.; mfg. of chemical estermfg. of flavorings and medicinals.
B. Tre	Gross estimate of annual discharge: 1,000 tons (method 6). eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Expect sewage treatment and solid waste decomposition to form small quantities. Fir: surface spreading of sludges/slurries containing borneol will result in its evaporation into the air.
2.	Drinking water treatment (e.g., chlorination): treatment. Not formed during drinking water
	Natural Pine oil component (tree stumps); normal component of forest runoff.
2.	Chemical reactions None identified.
	Solid waste leachate Leaches from municipal waste, biological waste (such as tree sludges/slurries where compound is unrecovered reactant in above industries. Man caused non-point source General use of paps, paints, perfumes and flavors; evaporation from perfumes. Lab use.
is* i	radability (persistence): Very difficult to degrade (category 4).

	al: <u>bromobenzene</u> omenclature: 108-86-1	2. Structure:	Br
Sources A. Ind	halogenated benzene derivative : ustry Point Source (Water and Air) Manufacturers: Organic chemical industry.		
2.	Users: Solvent (fats, waxes, or resins); intermediates synthesis; additive to motor oil and fuels.	s in specialty org	ganic chemic
B. Tre	Gross estimate of annual discharge: 200 tons (moratment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Not sewage treatment or decomposition of solid wastes. Eduring chlorination of sewage effluent.	produced during	
2.	Drinking water treatment (e.g., chlorination): Forms chlorination.	ed in small quant	ities during
• • • •	n-Point Source: Natural None.		
3.	Chemical reactions Phenyl radical + bromine → bromobenzene + HOBr → bromobenzene + water Solid waste leachate Will leach from industrial slucture a component. Man caused non-point source General lab use: use a material slucture read surface rupoff	lges/slurries of w	hich it is
Biodegi	motor oils to water; road surface runoff. adability (persistence): Moderately persistent (2-18 m	onths) (category	4).
Effectiv	ve treatment method: Activated carbon (90-100%);	incineration (gre	eater than 90

Chemic		2. Structure:
CAS N	lomenclature: 106-39-8	Br Br Br
Class:	halogenated benzene derivative	
Sources	5:	ortho
	dustry Point Source (Water and Air) Manufacturers: Organic chemical industry	CI meta para
2.	Users: Intermediate in synthesis of organic	con sounds.
	Gross estimate of annual discharge: 300	tons (method 7).
1.	Waste treatments/disposal (sewage and solid sewage treatment or decomposition of solid	ds): Not produced during biological wastes. Formed in small quantities during
	chlorination of sewage effluent. Small que which it is a constituent, and small quantit	antities released during sludges/slurries of ties released to air during surface spreading
2.	Drinking water treatment (e.g., chlorination	
	Formed in small quantities during drinking	water chlorination.
	on-Point Source: Natural <u>None</u> .	
2.	Chemical reactions Phenyl radical + ch	lori: e + bromine →bromochlorobenzene:
•	benzene + HOCl + HOBr →bromochlor	oberzene + water
3.	Solid waste leachate Will leach from sluc	dges/slurries in which it is a component.
	Man caused non-point source General lab	poratory use.
4.	(Constant late	
	radability (persistence): Persistent (category	

	· · · · · ·	al: bromodichloromethane	2. Structure:
CA	15 N	omenclature: 75-27-4	——— H
Cle	ass: n	non-cyclic halogenated alkane	tc1
	urces		Br
		lustry Point Source (Water and Air)	
		Manufacturers: Organic chemical industry.	
	2.	Users: Fire-extinguisher fluid ingredient; solve intermediate; heavy liquid for mineral and salt	
	3.	Gross estimate of annual discharge: 300 tor	as (method 7)
В.		eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):	Formed during chlorination of sewage
		effluents. Not formed during biological phase gradation of solid wastes, or incineration of mand slurries.	
	2.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps.	Results from chlorination of finished
c.	. No	Drinking water treatment (e.g., chlorination):	Results from chlorination of finished
c.	No 1.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None	
c.	No 1.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori	ne + bromine → bromodichloromet
c.	No 1.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC	ne + bromine → bromodichlorometh CBr+HOCl → bromodichloromethane + v
c.	No 1. 2.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC Solid waste leachate Will leach from industric it is an ingredient.	ne + bromine → bromodichlorometh Br+HOCl → bromodichloromethane+v i waste sludges and slurries of which
c.	No 1. 2.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC Solid waste leachate Will leach from industric	ne + bromine → bromodichlorometh Br+HOCl → bromodichloromethane+v i waste sludges and slurries of which
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC Solid waste leachate Will leach from industric it is an ingredient. Man caused non-point source Use of fire esting sewage; general use of chlorinated water, lab	ne + bromine → bromodichlorometh Br+HOCl → bromodichloromethane + vaste sludges and slurries of which vishers; constituent in municipal use.
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC Solid waste leachate Will leach from industric it is an ingredient. Man caused non-point source Use of fire esting	ne + bromine → bromodichlorometh Br+HOCl → bromodichloromethane + v i waste sludges and slurries of which uishers; constituent in municipal use.
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC Solid waste leachate Will leach from industric it is an ingredient. Man caused non-point source Use of fire esting sewage; general use of chlorinated water, lab	ne + bromine → bromodichlorometh Br+HOCl → bromodichloromethane + v i waste sludges and slurries of which uishers; constituent in municipal use.
Bio	No. 1. 2. 3. 4. odegr	Drinking water treatment (e.g., chlorination): water; not formed in prior purification steps. on-Point Source: Natural None Chemical reactions (Air) Methyl radical + chlori (Water) methyl carbonyl or hydroxy organics + HC Solid waste leachate Will leach from industric it is an ingredient. Man caused non-point source Use of fire esting sewage; general use of chlorinated water, lab	ne + bromine → bromodichlorometh Br+HOCI → bromodichloromethane + v waste sludges and slurries of which vishers; constituent in municipal use.

Chemical: bromoform	2. Structure:
CAS Nomenclature: 75–25–2	Br
	Вr
Class: non-cyclic halogenated alkane	Br
Sources:	2,
A. Industry Point Source (Water and Air)	
1. Manufacturers: Organic chemical industry.	
2. Users: Pharmaceutical mfgs. (sedative antitussi	: ingredient in fire-resistant chms:
gage fluid; heavy liquid in solid separations bas	
geological assaying, solvent for waxes, greases	•
3. Gross estimate of annual discharge: 2,000 ton	s (method 3).
B. Treatment Point Source (Water and Air)	
 Waste treatments/disposal (sewage and solids): 	Formed during chlorination of sewage
effluents. Not formed during biological phase o	
gradation of solid wastes or incineration of muni	cipal refuse or industrial sludges and
slurries.	
2 5::1::-:	
2. Drinking water treatment (e.g., chlorination):	Results from chlorination of finished
water; not formed in prior purification steps.	
C. Non-Point Source:	
1. Natural None	•
, talora: 140he	
2. Chemical reactions (Air) Methyl radical + bromi	ne → bromoform + hydrogenbromide
(Water) methycarbonylor methyl hydroxyl organi	cs+HOBr→bromoform+water+organic a
3. Solid waste leachate Will leach from industria	waste sludges and slurries of which
it is an ingredient. Lab use.	
4. Man caused non-point source Use of fire-resists	nt materials and their subsequent
disposal	
Biodegradability (persistence): Refractory (Category 5)	
Effective treatment method: A. Harris I	
Effective treatment method: Activated carbon (90-1009	oj; derarion.

Clas		lature:				\mathcal{E}	3r 9
- 103	ss: halog	enated aldehyd	le			Br (3r (CH2) - C-
	Sources:					В	Sr.
٨.	Industry	Point Source (Water and Air)			
	1. Man	ufacturers: No	one identified	·			
							
	4.7						
	2 Hear	: Nama idambi	t: ad				
	Z. User	S: None identi	nea.				
	3 Gro	s estimate of a	innual dischar	re l tor	or less (met	had 6)	
		nt Point Source	``		Of fess (men	100 0	
D.		e treatments/d	•	*	c)·		
	sewage, biolog						
	muni						ipal or industri
	waste		di wasie decoi	iiposi i oii oi	menano	ii or mome	ipui oi muusii
	11431			· · · · · · · · · · · · · · · · · · ·			
	2. Drin	ing water trea	ntment (e.g.,	chlorinatio	n): Passibly	formed du	ring chloringti
							ring chlorinati
		ing water trea ished water.			n): <u>Possibly</u>		
c.	of fir	nt Source:					
c.	of fir	ished water.					
С.	of fir	nt Source:					
с.	of fir	nt Source:					
c.	Non-Poi	nt Source:	ntified.				
	Non-Poil. Nate	nt Source: ural None ide	ntified. Bromoform +	acrolein			
c.	Non-Poil. Nate	nt Source: ural None ide	ntified. Bromoform +	acrolein			
•	Non-Poil. Nate	nt Source: ural None ide	ntified. Bromoform +	acrolein	→ bromofo	rm butanal	
•	Non-Poil. Nate 2. Ches 3. Solid 4. Man	nt Source: ural None ide	ntified. Bromoform + te None ider oint source G	acrolein ntified.	→ bromofo	rm butanal	
•	Non-Poil. Nate 2. Ches 3. Solid 4. Man	nt Source: ural None ide	ntified. Bromoform + te None ider oint source G	acrolein ntified.	→ bromofo	rm butanal	
•	Non-Poil. Nate 2. Ches 3. Solid 4. Man	nt Source: ural None ide	ntified. Bromoform + te None ider oint source G	acrolein ntified.	→ bromofo	rm butanal	

	cal: bromophenyl phenyl ether	2. Structure:
CAS N	omenclature:	
Class:	halogenated ether	$Br = \langle $
Sources		
	lustry Point Source (Water and Air)	
1.	Manufacturers: None identified.	
2.		
	Gross estimate of annual discharge: 3 tons (methods)	od 6).
	eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): C biological activity in sewage sludge, solid wastes	. Not formed during combustion o
	municipal or industrial wastes. Bromophenyl pher chlorination of treated sewage.	
2.	Drinking water treatment (e.g., chlorination): C	ompound is formed during
	on-Point Source: Natural None.	
2.	Chemical reactions Phenyl ether + HOBr b	romophenyl phenyl ether.
3.	Solid waste leachate No information.	
	Man caused non-point source General use of constituent in domestic waste waters, use as a lab	orinated waters, potential oratory chemical.
Biodegi	radability (persistence): Persistent (category 5).	
Effecti	ve treatment method: Activated carbon (90–100%	6).

١.	-	emic		2. Structure:
	CA:	s No	omenclature: 104-51-8	$(CH_2)_3 - CH_3$
3.	Cla	ıss:	aryl alkane	
	Sou	urces: Indu		
		2.		; solven for coating compositions; plasticize gent; as palt component; naphtha constituent
	В.	Tre	ratment Point Source (Water and Air) Waste treatments/disposal (sewage and so or degradation of solid wastes. Incinerat	00 tons (method 7). lids): Not produced during sewage treatment ion of coganic petroleum or coal wastes and bound to the air.
		2.	tura mit maa mit	tion): Not produced during drinking water
	c.		n-Point Source: Natural <u>Petroleum, coal</u> .	
		2.	Chemical reactions None identified.	
			as a constituent.	ses of a sphalt and naphtha; general
5.	Bio	degr	radability (persistence): Difficult to degrad	de biologically (category 3).
6.	Effe	ectiv	ve treatment method: <u>Activated carbon (</u> 9	20-10(%); biological treatment (90-100%).

		al: butylbromide	_ 2. Structure:
CA	s No	omenclature:	$ CH_3-(CH_2)_3-Br$
Cla	ss: <u>r</u>	non-cyclic halogenated alkane	
	rces		
Α.		ustry Point Source (Water and Air) Manufacturers: Organic chemical industry.	
	•	Organic cremical massify:	
	2.	Users: Intermediate in synthesis of other product. (al	kylating agent).
В.		Gross estimate of annual discharge: 1,000 tons met atment Point Source (Water and Air)	hod 7).
		Waste treatments/disposal (sewage and solids): ⁵ orm effluents. Not formed during biological phase of sew gradation of solid wastes, or incineration of municipand siurries.	age treatment, biological de-
	2.	Drinking water treatment (e.g., chlorination): Resulting water; not formed in prior purification steps.	
с.	No	n-Point Source:	
	1.	Natural None	
	2.	Chemical reactions (Air) butyl radical + bromine → b	outylbromide; (Water) unsaturated
	3.	Solid waste leachate Will leach from industria was	te studges and sturries of which
		it is present.	
	4.	Man caused non-point source Constituent of municipy chlorinated water. Lab use.	pal sewage; general use of
Bio	degr	adability (persistence): Difficult to degrade biol agica	ally (category 3).
Effe	ectiv	ve treatment method: Activated carbon (90-100%); ac	eration.

	Che	mic	cal: camphor	2. Structure:				
	CA	s No	omenclature:	HG CH,				
•	Cla	s s: _	ketone (cyclic alkane derivative)	CH3 CH3 O				
-		rces						
	Α.	. Industry Point Source (Water and Air)		CH3				
		1.	Manufacturers: Organic chemical industry;	wood processing				
			industry.					
		2.	Users: Odorant/flavorant in household, phenological plasticizer for cellulose esters and ethers; in	harmaceutical and industrial products;				
			lacquers and varnishes; explosives; embalmir intermediate.	ng fluid; plastics mfg.; chemical				
		Tre	Gross estimate of annual discharge: 2,000	tons (method 3).				
	В.		eatment Point Source (Water and Air)					
			Waste treatments/disposal (sewage and solid					
			during sewage treatment/disposal. Surface s camphor will result in its emission to the air	spreading of sludges/slurries containing .				
		2.	Drinking water treatment (e.g., chlorination treatment.	n): Not formed during drinking water				
	С.		on-Point Source: Natural Major component of pine oil (leav China, Formosa, Japan); present in forest ru	ves, twigs, stems of camphor tree of noff.				
		2.	Chemical reactions None identified.					
		3.	Solid waste leachate Leaches from municipa	I and hiological wastes (such as trace)				
		٠.	and sludges/slurries where compound is unrec	covered reactant in above industries				
		4.	Man caused non-point source General use	of soaps lacquers varnishes medicinal				
		•	insect repellant, embalming fluid discharged	to municipal sewers. Lab use				
	Bio	degr	radability (persistence): Very difficult to deg	grace (category 4).				
-								
•	Effe	ectiv	ve treatment method: <u>Biological treatment; c</u>	activated carbon.				

CAS	5 No	al: <u>e-caprolactam</u> omenclature: <u>105-60-2</u>	-
Cla	 ss:	amide	—)\H
Soul	rces:		_
Α.	Indi	ustry Point Source (Water and Air)	
	1.	Manufacturers: Organic chemical industry.	
	2.	Users: Nylon mfg. and processing, mfg. of plastics leather, plasticizers and paint vehicles, cross inking synthesis of amino acid lysine.	ng agent for curing polyurethane
	3.	Gross estimate of annual discharge: 600 tons (method	od 6).
В.	Tre	atment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids): No	formed during sewage treatmen
		or biological degradation of solid wastes.	
	2.	Drinking water treatment (e.g., chlorination): No	formed during water treatment.
с.		n-Point Source:	
	1.	Natural None.	
	2.	Chemical reactions None identified.	
	3.	Solid waste leachate Potential leachate from waste	es in which compound is
		constituent.	
	4.	Man caused non-point source General use of rylon application of paints and coatings.	products, certain plastics,
Biod	dear	adability (persistence): <u>Difficult to degrade biolog</u>	ically (approximately 6 manths
one	yec	ar) (category 3).	ICALLY TAPPLOXIMINETY OF MOUNTS
Effe	ectiv	re treatment method: Activated carbon.	

		al: carbon disulfide	2. Structure:			
CA	5 N	omenclature:	.S==C==S			
Cla	iss:	mercaptans and other sulfur organics				
Sou	rces	:				
A.		ustry Point Source (Water and Air)				
	1.	Manufacturers: Petroleum and coal tar rel	fininc (minute amounts).			
	_					
	2.	Users: Mfg. rayon, cellophane, carbon tetro				
		flotation chemicals; mfg. soil disintectants;				
		(phosphorus, sulfur, bromine, iodine, seleniu fumigants, soil conditioners, herbicides; pape				
		(animals).	er mig (strengm); pridmaceorical mig			
	3,	Gross estimate of annual discharge: 10,000	(method 2)			
В.	Tre	Gross estimate of annual discharge: 10,000 (method 2), reatment Point Source (Water and Air)				
		Waste treatments/disposal (sewage and solids	s): Biological degradation of various wa			
		will produce small quantities of carbon disulf				
		wastes (e.g., municipal refuse, sewage slud	ge, industrial wastes).			
	2.	Drinking water treatment (e.g., chlorination	n): Net formed during water			
		treatment.				
_	NI.	n-Point Source:				
C.		nn-roths source: Natural Minor constituent in petroleum and	t coal			
	••	Minor Constituent in perforeall dic	2 Cours			
	_					
	2.	Chemical reactions Carbon disulfide, forma	ation due to soil organisms metabolizing			
		nabam (fungicide). Solid waste leachate Leaches from biologic	al weeks			
•	3	Polita Masie reactions Feacues itom protodic	cai wasies.			
•	3.					
•	3.4.	Man caused non-point source General use	as fumigant, degradation of rubber			
•		Man caused non-point source General use products. Lab use.	as fumigant, degradation of rubber			
Bio	4.	products. Lab use.				
Bio	4.					
Bio	4.	products. Lab use.				
	4.	products. Lab use.	biologically (6-12 months) (category 3)			

		al: carbon tetrachloride	2. Structure:
CAS	N	omenclature: 56-23-5	. C1
		10 1 1 1 1 11	C1 — C — C1
	_	non-cyclic halogenated alkane	ė.
Sour			
Α.		ustry Point Source (Water and Air)	
	١.	Manufacturers: Organic chemical industry.	
	2.	Users: Fire extinguisher mfg; dry cleaning opera ions;	mfg of refrigerants, aerosols
		and propellants; mfg. of chlorofluoromethanes (8)%);	extractant; solvent; veterina
		medicine; metal degreasing; fumigrant; chloring o	rganic compounds.
	2	Consideration of a small discharge 00 000:	1 10
		Gross estimate of annual discharge: 20,000 tons (met	fhod 2).
В.		atment Point Source (Water and Air)	
	١.	Waste treatments/disposal (sewage and solids):	
			iste rubber could release smal
		quantities to the air. Disposal of solvents or was e slu	dges/slurries would result in
		small quantities emitted to the air.	**************************************
	2.	Drinking water treatment (e.g., chlorination):	
			· · · · · · · · · · · · · · · · · · ·
_			
С.		n-Point Source:	
	١.	Natural None	
	2.	Chemical reactions (Air) methyl radical + chlorine → c	carbon tetrachloride
		A	
	3.	Solid waste leachate Would leach from municipal sol	lid waste and other industrial
		solid wastes containing the compound.	
	4.	Man caused non-point source Fire extinguisher use,	insecticide use, grain and so
		fumigation use, general lab use.	
Biod	degr	adability (persistence): Refractory (category 5'	
	·		
	.1.	ve treatment method: Activated carbon (90-100%).	
Ctt-		M TRADITIONE MOTIONS A ABOUNDED ANNAM SULL INITES	

١.	Chemic CAS N	Nomenclature: 57-74-9 2. Structure:	
3.	Class:	cyclic halogenated alkene	Х Н
4.		ndustry Point Source (Water and Air) I. Manufacturers: Pesticide mfg.	C, H
	2.	2. Users: Insecticide.	
	B. Tre	3. Gross estimate of annual discharge: Less than 1 ton (method 5). Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sew or degradation of solid wastes. Released to air when wastes containing incinerated (e.g., municipal refuse, sewage sludge, industrial sludges	material are
	2.	2. Drinking water treatment (e.g., chlorination): Not formed during drin purification.	king water
	C. No.	Non-Point Source: 1. Natural None	
	2.	2. Chemical reactions None identified.	
	3.	3. Solid waste leachate Will leach from solid wastes of which it is a cor	stituent.
	4.	4. Man caused non-point source <u>Agricultural runoff</u> , Lab use.	
5.	Biodeg	egradability (persistence): Persistent: approximately 3 years to degrade (co	ategory 5).
6.	Effecti	ctive treatment method: Activated carbon (90-100%); incineration inefficiently residual concentrations (~50%).	cient for

		omenclature: 108-0-7			
Clo	ıss:	halogenated benzene derivative	-		
Sou	rces	:			
Α.		lustry Point Source (Water and Air)			
	1.	Manufacturers: Organic chemical industry.			
	2.	Users: Solvent recovery plants; intermediate in cinsecticide mfg.; mfg. phenol, chloro nitrobenze	yestuffs	mfg.; mfg.	aniline;
		Insecticide mig.; mig. phenor, chiolo innobera			
		Gross estimate of annual discharge: 4,000 tons (method	2).	
В.	Tre				
	1.	Waste treatments/disposal (sewage and solids): Machlorination of sewage. Not produced during bit	ological	sewage trea	tment or de-
		composition of solid wastes. Incineration of orce	inic indu	<u>istrial wastes</u>	in which chlor
		benzene is a constituent will release small quant	ties. N	lot released	during incinera
	2.	of municipal refuse. Drinking water treatment (e.g., chlorination): v	Nav be fo	ormed during	
		ablaringtion of finished water		ornica dorning	
С.		on-Point Source: Natural None			
	1.	That Utal			
	2.	Chemical reactions (Air) phenyl radical + chlorine	→chloro	benzene + c	hlorine radical;
	_	(Water) benzene + HOCI → chlorobenzene + water	• • • • • • • • • • • • • • • • • • • •		
	3.	Solid waste leachate Will leach from industrial	s ludges,	/slurries of v	which it is
		a component.			
		Man caused non-noint source C III			
		Man caused non-point source General laborator	y use; u	se as a solve	nt; general use
Bio	4.	Man caused non-point source <u>General laborator</u> of chlorinated water. radability (persistence): <u>Moderately persistent (2-1</u>			
Bio	4.	of chlorinated water.			

	Che	emiç	al: 1,2-bis-chloroethoxy ethane		
	CA	S No	omenclature: 112-26-5	Sand-residentifica - 2000 gains	
				CI-CHZCHZO-CHZ-CHZO-CHZ (1/2-0	
•	Cla	ıss: <u>h</u>	alogenated ether	- American de Carlos de Ca	
١.		rces	•		
	A.		lustry Point Source (Water and Air)		
		1.	Manufacturers: Organic chemical industry.		
		2.	Users: Solvent for hydrocarbons, oils, etc; e:	xtractant: intermediate for resins and	
			·		
		2	Gross estimate of annual discharge: 30 tons	(
	D		eatment Point Source (Water and Air)	(mernod 6).	
	В.		•arment Point Source (water and Air) Waste treatments/disposal (sewage and solids	c).	
		١.	· · · · · · · · · · · · · · · · · · ·	degradation of sewage or solid wastes,	
			by combustion of municipal or industrial wa	usres,	
		2.	Drinking water treatment (e.g., chlorination treatment by chlorination of diethoxyethane cosmetics, flavors, and perfumes.	n): <u>Possible creation during drinking</u> water (acetal) which is used in medicine (hypnotic)	
	_	NI.	D: LC		
	C.		on-Point Source: Natural None	•	
		•	None None		
		_			
		2.	Chemical reactions (Air) possible formation	by halogenation of ethers formed photo-	
		_	chemically from radicals. (Water) acetal + H	10Cl → 1,2-bis-chlorothoxy ethane.	
		3.	Solid waste leachate Compound will leach fi	rom municipal and industrial solid wastes	
		A	of which it is a constituent. Man caused non-point source General use of	Calabata water aterial andicor	
		4.	in domestic waste waters; use as a laborator		
=	D:_	ما د			
,	DIO	aegi	radability (persistence): Moderately persistent	: 2-10 months) (garegory 4).	
					
6.	Eff	ecti	ve treatment method: Activated carbon (90-10	00%).	
-					

Che	emic	al: b-chloroethyl methyl ether	2. Structure:
CA	S No	omenclature:	 СН <u>-</u> -ОСН ₂ СН
Cla	 153:	halogenated ether	
Sou	ırces	:	
Α.		lustry Point Source (Water and Air) Manufacturers: None identified.	
	2.	Users: None identified.	
		Gross estimate of annual discharge: 10 tons or	less (method 7).
В.		eatment Point Source (Water and Air)	
	١.	Waste treatments/disposal (sewage and solids): Not	formed by biological degradation
		of sewage or solid wastes, or by combustion of	
	2.	Drinking water treatment (e.g., chlorination): chlorination (possibly from ethyl methyl ether	Formed during drinking water which is used as a medicine).
с.		on-Point Source:	
	1.	Natural None.	
	2.	Chemical reactions (Air) Possible formatation ha	ogenation of ethers formed photo-
	3.	chemically from radicals. (Water) ethyl methyl Solid waste leachate No information.	e <u>ther + HOCI → b−chloroethyl methyl eth</u> er + w
		Man caused non-point source General use of constituent in domestic waste waters; use as a	boratory chemical.
Bio	degr	radability (persistence): Moderately persistent (2	2-18 months) (category 4).

Class: Sourc A. II	es: no ces: Indus I. A	menclature: 67-66-3 on-cyclic halogenated alkane stry Point Source (Water and Air) Manufacturers: Organic chemical industry. Users: Mfg fluorocarbon refrigerants and propella	C1—C—H —————————————————————————————————
Source A. II	ces: Indus I. A	stry Point Source (Water and Air) Manufacturers: Organic chemical industry.	CI
Source A. II	ces: Indus I. A	stry Point Source (Water and Air) Manufacturers: Organic chemical industry.	CI
A. II	ndus 1. A - - 2. Ū	Manufacturers: Organic chemical industry.	
1	1. Λ - - 2. ῖ	Manufacturers: Organic chemical industry.	
	- - 2. ī		
2	- - 2. Ū	Users: Mfg fluorocarbon refrigerants and propella	
	р	gooiooaisoi. Totti goraino ana proponie	ats and plastics, mfa, anesthetics ar
		pharmaceuticals, primary source for chlorodifluor	omethane; fumigant; solvent; sweete
	fi	ire_extinguisher mfg; electronic circuitry mfg;	
•	- o 7	Green astimute of appeal disabargo. 2 000 tons	thd-2\
		Gross estimate of annual discharge: 2,000 tons (tment Point Source (Water and Air)	memod Z).
	1. V	Waste treatments/disposal (sewage and solids): Fo	ormed during chlorination of sewage
2	- 2. D -	Orinking water treatment (e.g., chlorination): _3	desults from chlorination.
		-Point Source: Natural <u>None</u>	
_			
2	2. (Chemical reactions (Air) methyl radical + chloring	
5	3. 3	or methyl hydroxyl organics + HOCl chloroform Solid waste leachate Would leach from industrial	and municipal solid wastes
•		sludges, or slurries.	and momerput sortid wastes,
4		Man caused non-point source Soil fumigation, u	se of fire extinguishers, pharma-
	<u>c</u>	ceuticals, sweeteners, insecticides, fluorocarbon	plastics. General lab use.
Biod€	egra	dability (persistence): Refractory (category 5)	
Effec	tive	e treatment method: Activated carbon (90-100%)	•

Che	emic	cal: chlorohydroxy benzophenone	2. Structure:
CA	SN	Nomenclature:	GI O
Clo	155:	halogenated ketone	HO []
	rces		
-	-	dustry Point Source (Water and Air)	
, , ,		Manufacturers: Organic chemical industry	
	•	Organic chemical madsity.	
	2.	Users: Light absorber (optimum range 320-380 nicro	ns).
	^		
_		Gross estimate of annual discharge: 10 tons or less (m	ethod 6)
В.		eatment Point Source (Water and Air)	
	١.	Waste treatments/disposal (sewage and solids): Probab	oly not formed by biological
		activities in sewage sludge, solid wastes.	
	2.	Drinking water treatment (e.g., chlorination): Form	ed during chloringtion process
	•	if hydrayyhanzanhanana is museum	
С.	No	on-Point Source:	
	1.	Natural None.	
	_		
	2.	Chemical reactions Chlorination of hydroxyber zopher	none
•	2	Calid waste leadage N. C.	
	٥.	Solid waste leachate No information.	
	4	Man caused non-point source No information,	
	- f •	Than caused hon point source 140 information,	
Rio	dear	radability (persistence): Persistent (very difficult to dec	
Dio	uegi	reductivity (persistence). Persistent (very difficulty to dec	grade) (caregory 3).
		*	
Effe	ectiv	ve treatment method: Activated carbon (90-100%) prob	able.
	J	7.01174104 Calbon (70 100 3) plot	MD101
~			

CAS Name alature	2. Structure:
CAS Nomenclature:	
Class: halogenated ether	CH ₃
Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry. Conpropylene glycol manufacture.	stituent in waterborne wastes from
2. Users: <u>Processing fats, waxes, greases; textiles madiate in synthesis; extractant; paint and varnish</u>	
3. Gross estimate of annual discharge: 400 tons (me B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degree by combustion of municipal or industrial wastes.	dation of sewage or solid wastes, or
2. Drinking water treatment (e.g., chlorination): \(\lambda \) of drinking water.	
C. Non-Point Source: 1. Natural None	
 Chemical reactions (Air) possible formation by he chemically from radicals. (Water) chlorination of Solid waste leachate Compound will leach from rof which it is a constituent. Man caused non-point source General use of child in domestic waste waters; use as a laboratory chem 	f appropriate ether. municipal and industrial solids wastes orinated waters; potential constituent
Biodegradability (persistence): Highly refractory to bicle (category 5).	
Effective treatment method: Activated carbon (90-100°5)	

$C \Delta$	SMIC S NL	cal: <u>chloromethyl ether</u> lomenclature: <u>542–88–1</u>		
<u> </u>	J 140	Official of C. 342-88-1	- T '	
Cla	ss: h	nalogenated ether	- 2 2	
	rces			
Α.		dustry Point Source (Water and Air)		
	1.	Manufacturers: Organic chemical industry		
	2.	Users: Mfg irritant gases (lacrymators); chlorome hy intermediate.		
В.		Gross estimate of annual discharge: 500 tons (metho	od 7).	
D.		Waste treatments/disposal (sewage and solids): Not formed by biological degradate	ion of sewage or solid wastes o	
		by combustion of municipal or industrial wastes.		
	2.	Drinking water treatment (e.g., chlorination): Fossi of dimethyl ether which is used as refrigerant, solve for sprays, welding gases.		
с.		on-Point Source: Natural <u>None</u>		
	2.	Chemical reactions (Air) fomaldehyde (gaseous) and h	ydrochloric acid (gaseous) can re	
٠		to form chloromethyl ether. (Water) methyl ether-HC Solid waste leachate Compound will leach from mun of which it is a constituent.	Cl - chloromethyl ether + water.	
	4.	Man caused non-point source Use of lachrymate type	oe irritant gases. Lab use.	
Bio	degr	radability (persistence): Moderately persistent: (2-18	months) (category 4).	

Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: None identified. 2. Users: None identified. 3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information.			halogenated ether	CH,-O-CH,-CH,
2. Users: None identified. 3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.	Cla	ISS:	natogenated ether	CH2 0-CH2-CH3
1. Manufacturers: None identified. 2. Users: None identified. 3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl - chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
2. Users: None identified. 3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.	۹.			
3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural Nane. 2. Chemical reactions (Air) possible formation by hologenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether +HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.		١.	Manufacturers: None Identified.	
3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural Nane. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether +HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural Nane. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether +HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.		•		
3. Gross estimate of annual discharge: 1 ton (method 7). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural Nane. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether +HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.		2.	Users: None identified.	
1. Waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ether. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
 Treatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):				
 Treatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):				
 Treatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):		3.	Gross estimate of annual discharge: 1 ton (mo	ethod 7).
Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes. 2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.	В.			
2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photo-chemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.	•		·	:
2. Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photo-chemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.			Not	formed by biological degradation of
 Drinking water treatment (e.g., chlorination): Formed during drinking water chlorination (possibly from ethyl methyl ether which is used as a medicine). Non-Point Source: Natural None. Chemical reactions (Air) possible formation by halogenation of ethers formed photochemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. Solid waste leachate No information. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photo- chemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ether 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
chlorination (possibly from ethyl methyl ether which is used as a medicine). C. Non-Point Source: 1. Natural None. 2. Chemical reactions (Air) possible formation by halogenation of ethers formed photo- chemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ether 3. Solid waste leachate No information. 4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.				
 Non-Point Source: Natural None. Chemical reactions (Air) possible formation by halogenation of ethers formed photo-chemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ether. Solid waste leachate No information. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.		_		
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 Natural None. Chemical reactions (Air) possible formation by halogenation of ethers formed photo-chemically from radicals. (Water) ethyl methyl ether + HOCl → chloromethyl ethyl ethers. Solid waste leachate No information. Man caused non-point source General use of chlorinated water; potential 		2.		
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4. Man caused non-point source General use of chlorinated water; potential constituent in domestic waste waters; use as a laboratory chemical.	с.	Nor 1.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by	which is used as a medicine).
constituent in domestic waste waters; use as a laboratory chemical.	с.	Nor 1.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by the chemically from radicals. (Water) ethyl methyl ethyl ethyl ethyl methyl ethyl	which is used as a medicine).
constituent in domestic waste waters; use as a laboratory chemical.	c.	Nor 1.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by the chemically from radicals. (Water) ethyl methyl ethyl ethyl ethyl methyl ethyl	which is used as a medicine).
	с.	Nor 1. 2.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by the chemically from radicals. (Water) ethyl methyl ethological waste leachate. No information.	which is used as a medicine). halogenation of ethers formed photo- ether + HOCI - chloromethyl ethyl ether
	c.	Nor 1. 2.	chlorination (possibly from ethyl methyl ether m-Point Source: Natural None. Chemical reactions (Air) possible formation by chemically from radicals. (Water) ethyl methyl colid waste leachate No information. Man caused non-point source General use of	which is used as a medicine). nalogenation of ethers formed photo- ether + HOCI - chloromethyl ethyl ether
	C.	Nor 1. 2. 3.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by the chemically from radicals. (Water) ethyl methyl of Solid waste leachate No information. Man caused non-point source General use of constituent in domestic waste waters; use as a	malogenation of ethers formed photo- ether + HOCI - chloromethyl ethyl ether
	C.	Nor 1. 2. 3.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by the chemically from radicals. (Water) ethyl methyl of Solid waste leachate No information. Man caused non-point source General use of constituent in domestic waste waters; use as a	malogenation of ethers formed photo- ether + HOCI - chloromethyl ethyl ether
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		Nor 1. 2. 3. 4.	Chemical reactions (Air) possible formation by chemically from radicals. (Water) ethyl methyl solid waste leachate No information. Man caused non-point source General use of constituent in domestic waste waters; use as a adability (persistence): Moderately persistent	malogenation of ethers formed photo- ether + HOCI - chloromethyl ethyl ethe shlorinated water; potential laboratory chemical. (2-18 months) (category 4).
		Nor 1. 2. 3. 4.	chlorination (possibly from ethyl methyl ether n-Point Source: Natural None. Chemical reactions (Air) possible formation by the chemically from radicals. (Water) ethyl methyl of Solid waste leachate No information. Man caused non-point source General use of constituent in domestic waste waters; use as a	malogenation of ethers formed photo- ether + HOC1 - chloromethyl ethyl ethers in the chlorinated water; potential laboratory chemical. (2-18 months) (category 4).

I. Chemical: "	n- chloronitrob	oenzene		2. Struc	ture:	Çı
CAS Nomenclati	ure: 121-7	3- 3				
. Class: hal	ogenated benz	ene derivative				NOZ
. Sources:						
A. Industry Poin	nt Source (Wa	ter and Air)				
1. Manufac	cturers: Orga	anic chemical inc	ustry.			
2. Users: _	Dyestuffs mfg;	chemical interm	ediate in organ	ic chemic	als syn	ithesis.
3 Gross es	timate of appr	ual discharge: 1	00 tons (mathod	1.6)		
	oint Source (V	<u> </u>	oo ions (method	10).		<u> </u>
		osal (sewage and	solids): Not r	roduced d	lurina l	hiological
		lecomposition of s				
during o	chlorination of	sewage effluent	, when ni rober	zene is pr	esent	in effluent.
2 Drinking	water treatm	ent (e.g., chlori	nation): [1:		212 1 1
		trobenzene is pre				

C. Non-Point S	Source:					
1. Natural						
2. Chemico	al reactions	Nitrobenzene +	HOC: →m-c	hloronitro	benzer	ne + water.
a compo	aste leachate pnent.	Will leach from				
water.		source General		, general	use of	chlorinated
. Biodegradability	(persistence):	Persistent (cated	gory 5).			
					······································	
. Effective treatme	ent method: _	Activated carbo	n (90-100%).			
		·				

Cla	166.	heterocyclic amine	
	rces		"
		lustry Point Source (Water and Air)	
	1.	Manufacturers: Pesticide mfg. industry.	
	2.	Users: Pharmaceutical mfg. (production of ar agricultural chemicals mfg.	ntihistamines); germicides, pesticides,
	3.	Gross estimate of annual discharge: 30 tons ((method 6).
В.	Tre	eatment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids):	
		treatment or decomposition of solid wastes. For	
		of sewage effluent when pyridine is present.	Incineration of organic industrial wastes
		and municipal refuse in which material is a co	
	2.	and municipal refuse in which material is a co	onstituent will release small quantities.
	2.	Drinking water treatment (e.g., chlorination)	constituent will release small quantities. Formed in small quantities during
	2.	and municipal refuse in which material is a co	onstituent will release small quantities. Formed in small quantities during
		and municipal refuse in which material is a confined by the confined confin	constituent will release small quantities. Formed in small quantities during
c.	No	Drinking water treatment (e.g., chlorination) chlorination, when pyridine is present in the con-Point Source:	constituent will release small quantities. Formed in small quantities during
c.	No	and municipal refuse in which material is a confined by the confined confin	constituent will release small quantities. Formed in small quantities during
C.	No 1.	and municipal refuse in which material is a confined by the co	onstituent will release small quantities. Formed in small quantities during water.
C .	No 1.	and municipal refuse in which material is a confined by the second prinking water treatment (e.g., chlorination) chlorination, when pyridine is present in the second principal chlorination. On-Point Source: Natural None.	chloropyridine + water.
C.	No 1. 2.	and municipal refuse in which material is a confined by the confined confi	chloropyridine + water.
C.	No 1. 2.	and municipal refuse in which material is a confined by the confined by the component. And municipal refuse in which material is a confined by the component of the component	chloropyridine + water.
C.	No 1. 2. 3.	and municipal refuse in which material is a confined by the confined confi	chloropyridine + water. rial sludges/slurries of which it is a
C.	No 1. 2. 3.	and municipal refuse in which material is a confined by the confined by the component. And municipal refuse in which material is a confined by the component of the component	chloropyridine + water. rial sludges/slurries of which it is a

Chemical: o-cresol		2. Structure:	CH ₃
CAS Nomenclature: 95-48-7		-	
Class: phenol		_	
Sources:		-	
A. Industry Point Source (Water and A	Air)		
1. Manufacturers: Coal tar refin	ing; petroleum refining	g; organic chemi	cal mfg.;
wood processing.			
2. Users: Disinfectant; food antic	xidant; perfume nfg.	; dye mfg.; plast	ics and resins
mfa.; pharmaceutical mfa.; he	erbicide mfg. (98% -DI	NOC, UCPA); tr	icresyl phosphate
mfg.; ore flotation, textile so		<u>intermediate mfg</u>	. of salicylaldehy
coumarin; surfactant; cresylic	acid constituent.		
3. Gross estimate of annual disch	arge: 2.000 tons (met	hod 1).	
B. Treatment Point Source (Water and			
1. Waste treatments/disposal (sev		auantities forme	ed durina sewaae
treatment (biological step) and			
industrial wastes. Released to			
trial sludges and slurries conta	ining o-cresol.		
2. Drinking water treatment (e.g		evidence of forma	<u>ition during water</u>
purification, probably formed	in small quantities.		
C. Non-Point Source:			
 Natural <u>Coal</u>, petroleum, co 	onstituent in wood, cor	nstituent in natur	al runoff.
2. Chemical reactions None id	entified.		
3. Solid waste leachate Leache	s from biologica! waste	es, municipal wa	stes, industrial
wastes containing the materia	, will be formed by de	egradation of hig	h molecular
weight tars and polymers.			
4. Man caused non-point source			
asphalt, general use of plastic	s, petroleum dis illate	s, fuels, perfum	es, oils, lubricant
metal cleaning and scouring c	ompounds, laboratory	chemical; consti	ruents in domestic
sewage.			
. Biodegradability (persistence): Low	persistence (~ : mont	ns tor complete o	degradation)
(category 3).			
Effective treatment method: Biologic	al treatment (95-100%	b); activated car	oon (95-100%);
incineration (>95%).			

	DDE		2.	Structure:
CAS Nome	enclature:			C1 -(=)
Class:	aryl alkene halogen	nated derivative		c=-c<
	ry Point Source (Wat anufacturers: <u>Pesti</u>			CI-()
2. Us	ers: Military produ	uct; DDT impurity; D	DT uses (insecti	cide).
B. Treatm 1. W	degradation of solid	/ater and Air) osal (sewage and sol d wastes when DDT i	ids): Forme	ed during sewage treatm used to air when wastes
<u>or</u> 2. Dr	nd slurrites).	ent (e.g., chlorinat	ion): <u>May be fr</u>	sewage sludges, industration
2. Dr <u>pu</u> — — C. Non-I	nd slurrites). inking water treatme	ent (e.g., chlorinat	ion): <u>May be fr</u>	omed during drinking wo
2. Dr 2. Dr pt ———————————————————————————————————	inking water treatme urification when DDI	ent (e.g., chlorinat I is present.	ion): <u>May be fr</u>	omed during drinking wo
2. Dr pt 2. Dr pt 2. Cl 3. So	inking water treatment of the principle	Dehydrohalogenati Will leach from so	ion): May be from	omed during drinking wo
2. Dr pt 2. Dr pt 2. Dr 2. Cl 3. So 4. M	inking water treatment orification when DDT Point Source: atural None Did waste leachate onstituents (minor co	Dehydrohalogenati Will leach from somponent in most was source Agriculture	on of DDT to DI lid wastes of whates due to wide	omed during drinking wo

CAS Nomenclature: 50-29-3		2. Structure:
Class: halogenated aryl al	kane derivative	CH-C-CI
Sources: A. Industry Point Source (W 1. Manufacturers: Pes		C1—(
2. Users: Insecticide		
B. Treatment Point Source (· · · · · · · · · · · · · · · · · · ·	nod 5). Not formed during sewage treatme
or degradation of sol	id wastes. Released to air	hen wastes containing material a lge, industrial sludges and slurrie
		Not formed during drinking water
purification.	ment (e.g., chlorination): <u>h</u>	Not formed during drinking water
purification. C. Non-Point Source:		Not formed during drinking water
C. Non-Point Source: 1. Natural None 2. Chemical reactions 3. Solid waste leachate	None identified. Will leach from solid west	Not formed during drinking water es of which it is a constituent.
C. Non-Point Source: 1. Natural None 2. Chemical reactions 3. Solid waste leachate 4. Man caused non-point	None identified. Will leach from solid west	es of which it is a constituent.

Class: unsubstituted alkane Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: petroleum refining. 2. Users: Organic synthesis; solvent; standardized hindrocarbon; jet fuel research; mf paraffin products: rubber industry; paper processing industry. Constituent in polyolefin manufacturing wastes. 3. Gross estimate of annual discharge: 300 tons (method 4). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment or decomposition of solid wastes. Incineration of municipal waste and industrial sludges and slurries containing petroleum constituents releases this compount to the air. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. C. Non-Point Source: 1. Natural industries, and wastes in which decone is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater fror general use of paraffins. Also laboratory use, fighway runoff, automobile exhaus motorboat exhaust, and from general use of pet roleum oils, fors, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) incineration (> 99%).	Chemi	ical: decane	2. Structure:
Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: petroleum refining. 2. Users: Organic synthesis; solvent; standardized h rarocarbon; jet fuel research; mf paraffin products; rubber industry; paper processing industry. Constituent in polyolefin manufacturing wastes. 3. Gross estimate of annual discharge: 300 tons (method 4). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment or decomposition of solid wastes. Incineration of municipal waste and industrial sludges and slurries containing petroleum constituents releases this compount to the air. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid wastend will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also Idaboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%)	CAS I	Nomenclature:	Сн _з —(СН _z) ₈ —С Н _з
 A. Industry Point Source (Water and Air) 1. Manufacturers: petroleum refining. 2. Users: Organic synthesis; solvent; standardized h 'drocarbon; jet fuel research; mf paraffin products; rubber industry; paper processing industry. Constituent in polyolefin manufacturing wastes. 3. Gross estimate of annual discharge: 300 tons (method 4). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatme or decomposition of solid wastes. Incineration of municipal waste and industrial sludges and slurries containing petroleum constituents releases this compount to the air. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid waster and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decone is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, fighway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%) 	Class:	unsubstituted alkane	
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 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatments or decomposition of solid wastes. Incineration of municipal waste and industrial sludges and slurries containing petroleum constituents releases this compount to the air. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid waste and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80- '5%); activated carbon (90-100%) 	3	Gross estimate of annual discharge: 300 tons (m	ethod 4)
 Waste treatments/disposal (sewage and solids): Not formed during sewage treatment or decomposition of solid wastes. Incineration of municipal waste and industrial sludges and slurries containing petroleum constituents releases this compount to the air. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. Natural Constituent in paraffin fraction of petroleum. Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid waste and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%) 			CHIOC 4/3
or decomposition of solid wastes. Incineration of municipal waste and industrial sludges and slurries containing petroleum constituents releases this compount to the air. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid waste and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)			
sludges and slurries containing petroleum constituents releases this compount to the air. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid waste and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%)	1 ,	. Waste frediments/atsposal (sewage and softas): F	vot formed during sewage treatme
2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%)			<u> </u>
 Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. Non-Point Source: Natural Constituent in paraffin fraction of petroleum. Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet aleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 			<u>uents releases this compount to th</u>
C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)		air.	
C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)	_	8	
C. Non-Point Source: 1. Natural Constituent in paraffin fraction of petroleum. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)	2.		Not formed during drinking water
 Natural Constituent in paraffin fraction of petroleum. Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 		purification.	·
 Natural Constituent in paraffin fraction of petroleum. Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 			
 Natural Constituent in paraffin fraction of petroleum. Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 			
 Natural Constituent in paraffin fraction of petroleum. Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 			
 Chemical reactions None identified. Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaust motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%) 	C. N	Non-Point Source:	
 Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaust motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 	3.	. Natural Constituent in paraffin fraction of petro	oleum.
 Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaust motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 			
 Solid waste leachate Will leach from general municipal and industrial solid wast and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaust motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%) 			
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and will leach from solid sludges and slurries of petroleum refining industry and paraffin utilizing industries, and wastes in which decane is a solvent. 4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaus motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)	3	Solid waste leachate Will leach from general m	unicipal and industrial solid wast
4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaust motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)			
4. Man caused non-point source Component in municipal waste and wastewater from general use of paraffins. Also laboratory use, highway runoff, automobile exhaust motorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)			
general use of paraffins. Also laboratory use, highway runoff, automobile exhausmotorboat exhaust, and from general use of pet oleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-15%); activated carbon (90-100%)	4	<u> </u>	
motorboat exhaust, and from general use of petroleum oils, tars, etc. Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-35%); activated carbon (90-100%)			
Biodegradability (persistence): Low persistence (1-2 months for complete degradation) (category 3) Effective treatment method: Biological treatment (80-35%); activated carbon (90-100%)			
(category 3) Effective treatment method: Biological treatment (80-35%); activated carbon (90-100%)	Biode		
Effective treatment method: Biological treatment (80-5%); activated carbon (90-100%)		T 1	inition complete degradation)
			5%). mativated amban (00-100%)
			5/0); activated carbon (90-100%)

		halogenated benzene derivative		1-3r
				·
	ces:			
		ustry Point Source (Water and Air)		
	١.	Manufacturers: Organic chemical industry.		
	2	Users: Solvent (fats, waxes, resins, oils); intermedia	te in chemical s	vnthesis:
		used in heavy liquid flotation processes (ortho-;; ingre		
		or transformer oils; constituent in motor fuels; organic		
		drugs; manufacture of intermediates, fumigants.		
	3.	Gross estimate of annual discharge: 200 tons (method	l 7).	
В.		atment Point Source (Water and Air)		
	1.	Waste treatments, disposal (sewage and solids): Not p	produced during	biological
		sewage treatment or decomposition of solid was es.		
		Incineration of orga		
		dibromobenzene is a constituent will release small que	antities; not rele	ased during
	2	incineration of municipal refuse. Drinking water treatment (e.g., chlorination): Forme		:.:
	۷.	chlorination.	a in small quant	iries auring
		CHOITE TOTAL	····	
С.		n-Point Source:		
	1.	Natural None.		
	2.	Chemical reactions (Air) phenyl radical + bromir e → dib	romobenzene: (M	Vater)
		benzene + HOBr → dibromobenzene + water.	CHOOSEHECTO, 1.	, 4, 6, 7
	3.	Solid waste leachate Will leach from industrial slud	ges/slurries of w	hich it is a
		component.		
	4.	Mon caused non-point source Use as a solven, use a	s a laboratory cl	nemical,
מים	J.,	agricultural runoff, use of transformer oils, his hway r	unott, general u	se of chlorin wa
DIOC	uegr	adability (persistence):		
		Persistent (category 5).		
CCC.	ctiv	re treatment method: Activated carbon (90-100%);	ncineration (>9	9%).

		al: dibromochloromethane	2. Structure:	
CA	S N	omenclature:	<u></u> Вr	
Clo	155:)	pon-cyclic halogenated alkane	 СІ—С—Н	
	Class: non-cyclic halogenated alkane Sources:		— Br	
		Justry Point Source (Water and Air)		
		Manufacturers: Organic chemical industry.		
	2.	Users: Mfg. fire extinguishing agents; mfg. aerosc	l propollants, mfa rofrigorents	
	٠.		or propertains; mig. reinigeranis;	
		g. pesitionesy organic symmetric		
	3.	Gross estimate of annual discharge: 300 tons (m	ethod 3).	
В.		eatment Point Source (Water and Air)		
	1.	Waste treatments/disposal (sewage and solids): For	rmed during chlorination of sewage	
		effluents. Not formed during biological phase of se	wage treatment, biological de-	
		gradation of solid wastes, or incineration of munici		
	2	Drinking water treatment (e.g., chlorination): Res	and the form of the state of th	
	۷.			
		water; nor formed in prior particulturisteps.		
c	Ne	on-Point Source:		
C .		Natural None		
	••	Transfer Transfer		
	2.	Chemical reactions (Air) methyl radical + bromine -	dibromochloromethane: (water)	
		methyl hydroxyl or methyl carbonyl organics + HOC		
	3.	Solid waste leachate Will leach from industrial wa	aste sludges and slurries of which lorg	
		it is an ingredient	jacı	
	4.	Man caused non-point source Use of fire extinguis	hers; constituent in municipal sewage	
		general use of chlorinated water; use of aerosol pro		
Bio	deg	radability (persistence): <u>Refractory (category 5).</u>		
	 -	ve treatment method: Activated carbon (90-100%);		

Chemical: dibromodichloroethane CAS Nomenclature:	
Class: non-cyclic halogenated alkane	- $Br-E-E-Br$
Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry.	— C/ C/
2. Users: Refrigeration and fire extinguishing applicati	ons.
3. Gross estimate of annual discharge: 300 tons (methods). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during biological phase of sewagradation of solid wastes, or incineration of municipal slurries. 2. Drinking water treatment (e.g., chlorination): Resulting the series of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids): Resulting the series of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages and solids (sewage and solids): Not formed during biological phase of sewages (sewage and solids): Not formed during biological phase of sewages (sewage and solids): Not formed during biological phase of sewages (sewage and solids): Not formed during biological phase of sewages (sewage and solids): Not formed during biological phase of sewages (sewage and solids): Not formed during	vage treatment, biological de~ al refuse or industrial sludges an
C. Non-Point Source: 1. Natural None	
 Chemical reactions (Air) ethyl radical + bromire + chemical reactions (Yater + hydrogen bromide + hydrogen chloride. (Yater 3. Solid waste leachate Will leach from industria was compound is present. Man caused non-point source Use of fire extir guish) unsaturated organics + HOBr + HO te sludges and slurries in which
Biodegradability (persistence): Refractory (category).	
Effective treatment method: Activated carbon (90-100%);	geration.

Cla	cc·	quinone			
	_		-		010
Sou A.	Ind	ustry Point Source (Water and Air) Manufacturers: Organic chemical industry			н С
	2.	Users: Oxidant, polymerization catalyst.			
В.	Tre	Gross estimate of annual discharge:50 tons (method eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): _Frobetreatment or during decomposition of solid wastesIr	ably r	not formed	during sewa
		item is a constituent, releases small quantities.	· · · · · · · · · · · · · · · · · · ·		
	2.	Drinking water treatment (e.g., chlorination): Not			***************************************
c.	No				***************************************
c.	No 1.	Drinking water treatment (e.g., chlorination): Not			***************************************
c.	No. 1.	Drinking water treatment (e.g., chlorination): Not on-Point Source: Natural None.	forme	d.	
c.	No. 1. 2. 3.	Drinking water treatment (e.g., chlorination): Not on-Point Source: Natural None. Chemical reactions None identified.	forme	d.	
	No. 1. 2. 3. 4.	Drinking water treatment (e.g., chlorination): Not on-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate No information.	forme	d.	

٦.	Che	emic	cal: <u>dibutyl phthalate</u> 2. Structure:
	CA	s N	omenclature: 84-74-2
3. 4.	C la Sou	rces	phthalate ester $ \begin{array}{c} C - O - (CH_2)_3 - CH_3 \\ C - O - (CH_2)_3 - CH_3 \end{array} $ i:
	Α.		lustry Point Source (Water and Aîr)
		1.	Manufacturers: Organic chemical industry.
		2.	Users: Plasticizer mfg. plastics mfg recycling or 1 processing; cosmetics; diluent in polysulfide dental impression materials; induser al stains mfg.; explosive (propellant) component used in fuel matrix of double-base packet propellant; textile lubricating agent; used in safety glass; insecticides, printing inks, paper coatings, adhesives.
		3.	Gross estimate of annual discharge: 300 tons (method 2).
	В.		eatment Point Source (Water and Air)
	υ,		Waste treatments/disposal (sewage and solids): Compound not formed during sewage treatment/solid waste disposal. Released to air during incineration of municipal refuse, general industrial rubbish, and waste s udges and slurries from plastic production and other manufacturing processes above.
		2.	Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment.
	C	No	on-Point Source:
	υ.		Natural None.
		2.	Chemical reactions None identified.
	**	3.	Solid waste leachate <u>Leaches from municipal and industrial wastes containing</u> plastics.
5.		deg	Man caused non-point source General use of lastics and above listed products. (leaches from tubings, dishes, paper, containes, etc.) Lab use, microcontaminant in lab chemicals, food, detergents, etc. Also from lipsticks, applications of paints, coatings, and adhesives; evaporates from perfucies, inks and insecticides. radability (persistence): Persistence greater than 18 mos. Compound is degraded slowly by gical organisms and is taken up and concentrated by them (category 5).
6.			ve treatment method: Activated carbon (90-10: %); incineration (greater than 99%).

<i>-</i>	ical: 1,4-dichlorobenzene 2. Structure:
CAS IN	Nomenclature: 106-46-7
Class:	halogenated benzene derivative
Sources	es:
	dustry Point Source (Water and Air)
1.	Manufacturers: Organic chemical industry; pest cide mfg. industry.
2.	. Users: Mfg. moth repellants; mfg. air deodorizers; mfg. dyes and intermediate
۷.	pharmaceuticals mfg.; soil fumigant; pesticide.
3.	Gross estimate of annual discharge: 1,000 tons (method 2)
	reatment Point Source (Water and Air)
1.	. Waste treatments/disposal (sewage and solids): Not produced during biologica
	sewage treatment or decomposition of solid wastes.
	Incineration of organic industrial wastes in wh
	dichlorobenzene is a constituent will release small quantities. Not released du incineration of municipal refuse.
2.	. Drinking water treatment (e.g., chlorination): Formed in small quantities during
	chlorination.
c N	Non-Point Source:
	Natural None
•	
2.	. Chemical reactions (Air) phenyl radical+chlorine -1,4-dichlorobenzene; (Wat
•	benzene + HOCl →dichlorobenzene + water.
3.	. Solid waste leachate Will leach from industrial sludges/slurries of which it is
	Man caused non-noint source. Constal laborations are against transfer and
	. Man caused non-point source General laboratory use; agricultural runoff; use
4.	of chlorinated water. gradability (persistence): Persistent (category 5)
4.	. Man caused non-point source General laboratory use; agricultural runoff; use of chlorinated water.
4.	. Man caused non-point source General laboratory use; agricultural runoff; use of chlorinated water.

	al: dichlorodifluoroethane	2. Structure:
5 No	omenclature:	_ CI CI - H-C-C-H
ss:	non-cyclic halogenated alkane	- H-C-C-1
ources:		- + 12
	•	
١.	Manufacturers: Organic chemical industry.	
2.	Users: Mfg of aerosol sprays; refrigerant; degree in	g applications.
3,	Gross estimate of annual discharge: 10 tons (meth	od 7).
		<u> </u>
1.	· · · · · · · · · · · · · · · · · · ·	
	and slurries.	par rerose or maosiriar stoages
2.	Drinking water treatment (e.g., chlorination): <u>(ay</u> of finished water; not formed in prior pulification)	result from chlorination cation steps.
2	Chamical reactions (At) II I II II II II II	
<i>L.</i>	Chemical reactions (Air) ethyl radical + chloring +	
	hydrogen fluoride + hydrogen chloride. (Water) *	*
3.	hydrogen fluoride + hydrogen chloride. (Water) * Solid waste leachate Will leach from industrial wait is an ingredient: will leach from municipal landf	* ste sludges and slurries of which ills due to disposal of spray cap
3.4.	hydrogen fluoride + hydrogen chloride. (Water) * Solid waste leachate Will leach from industrial wa it is an ingredient; will leach from municipal landf Man caused non-point source Aerosol spray or ns.	* ste sludges and slurries of which ills due to disposal of spray can Lab use.
3.4.	hydrogen fluoride + hydrogen chloride. (Water) * Solid waste leachate Will leach from industrial wait is an ingredient: will leach from municipal landf	* ste sludges and slurries of which ills due to disposal of spray can Lab use.
	3. Tree 1.	ss: non-cyclic halogenated alkane rces: Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry. 2. Users: Mfg of aerosol sprays; refrigerant; degreating Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during biological phase of segradation of solid wastes, or incineration of muricing

Chemic	cal: 1,2-dichloroethane lomenclature: 107-06-2	2. Structure:
CASI	omenclature: 107-06-2	CI CI
Class:	non-cyclic halogenated alkane	CI CI H-C-C-11
Source		H H
	dustry Point Source (Water and Air)	
١,	Manufacturers: Organic chemical industry.	
2.	Users: Mfg. of vinyl chloride; mfg of tetraethyl lead;	intermediate insecticidal
	fumigant (Peachtree borer, Japanese beetle, root-rot	
	constituent in paint, varnish and finish removers, met	
	soaps and scouring compounds, wetting and pene ratin	ng agents; used in chemical
3	synthesis and ore flotation. Gross estimate of annual discharge: 80,000 tons (met	thad 1)
	eatment Point Source (Water and Air)	mod 1).
	Waste treatments/disposal (sewage and solids): Possible	ility of production due to chlori-
2.	Drinking water treatment (e.g., chlorination): Result	ts from chlorination.
_	on-Point Source: Natural <u>None</u>	
2.	Chemical reactions (Air) ethyl radical + chlorine → 1,2	?-dichloroethane; (Water) alkene
3	+ HOCl → 1,2-dichloroethane + water. Solid waste leachate Will be present in municipal and	d industrial leachate where it
0,	is a component of the disposed items.	d Hiddshift leagnate where h
4.	Man caused non-point source Use of leaded fuels, as	
	tabacco flavoring, from applied paint, varnish and fi	
Biodeg	radability (persistence): Difficult to degrade (cctegory	
		(present in domesti sewage), Lab use.
		sewage), Lab use.
Effecti	ve treatment method: Activated carbon (90-100%).	
	Activated Carbon (70 Too 70).	

		S NA	al: <u>dichloroethyl ether (bis-2-chloroethyl ether)</u> 2. Structure: pmenclature: 111-44-4
	<u> </u>	3 140	CHCH=CH=CH=CH=CH=CH=CH=CH=CH=CH=CH=CH=CH
•	Cla	ss: h	alagenated ether
			: ustry Point Source (Water and Air) Manufacturers: Organic chemical industry. Constituent in waterborne waste of ethylene glycol manufacture.
		2.	Users: Fumigants; processing fats, waxes, greaser, cellulose esters; general solvent; insecticide mfg; textile mfg (scour textiles) and cleaning; mfg. butadiene, medicinal and pharmaceuticals; selective solvent; constituent in paints, lacquers, varnishes.
		3.	Gross estimate of annual discharge: 500 tons (method 3).
	В.	Tre	waste treatments/disposal (sewage and solids): Not formed by biological degradation of sewage or solid wastes, or by combustion of municipal or industrial wastes.
		2.	Drinking water treatment (e.g., chlorination): formed by chlorination of drinking water when ethyl ether is present.
	C	Nia	n-Point Source:
	С.		Natural None
		3.	Chemical reactions Can be formed from ethylene chlorhydrin in the presence of hydrogen ions. Ethyl ether HOCl - dichlorothyl ether + water. Solid waste leachate Compound will leach from municipal and industrial solid wastes of which it is a constituent. Man caused non-point source General use of a lorinated waters; potential constituent
5.	Bio		in domestic waste waters; use as a laboratory emical; general use as a solvent. adability (persistence): Moderately persistent: (!-18 months)(category 4).
5,	Effe	ectiv	ve treatment method: Activated carbon (90-100%).

		cyclic halogenated alkane	- CI Hoo I au
Sot	urces Ind	ss: cyclic halogenated alkene rces: Industry Point Source (Water and Air) 1. Manufacturers: Pesticide mfg.	CI
	2.	Users: Insecticide; wool processing industry.	
_	110	Gross estimate of annual discharge: Less than eatment Point Source (Water and Air)	
В.	1.	Waste treatments/disposal (sewage and solids): or degradation of solid wastes. Released to air incinerated (e.g., municipal refuse, sewage,	when wastes containing material are
в.		or degradation of solid wastes. Released to air	when wastes containing material are sludge, industrial sludges and slurries) Not formed during drinking water
С.	2.	or degradation of solid wastes. Released to air incinerated (e.g., municipal refuse, sewage, Drinking water treatment (e.g., chlorination):	when wastes containing material are sludge, industrial sludges and slurries) Not formed during drinking water
С.	2.	or degradation of solid wastes. Released to air incinerated (e.g., municipal refuse, sewage, Drinking water treatment (e.g., chlorination): purification.	when wastes containing material are sludge, industrial sludges and slurries) Not formed during drinking water
С.	2. No 1.	or degradation of solid wastes. Released to air incinerated (e.g., municipal refuse, sewage, Drinking water treatment (e.g., chlorination): purification. on-Point Source: Natural None Chemical reactions Aldrin can be epoxidized v	when wastes containing material are sludge, industrial sludges and slurries) Not formed during drinking water
С.	2. No 1.	or degradation of solid wastes. Released to air incinerated (e.g., municipal refuse, sewage, Drinking water treatment (e.g., chlorination): purification. on-Point Source: Natural None Chemical reactions Aldrin can be epoxidized v	Not formed during drinking water with peracids to form dieldrin.

	cal: diethyl phthalate 2. Structure:
CAS N	Nomenclature: 84-66-1
Class.	phthalate ester cs: C-0-CH_2-CH_3 C-0-CH_2-CH_3
Source	primatare ester
	dustry Point Source (Water and Air)
	. Manufacturers: Organic chemical industry.
2	. Users: Plasticizer mfg.; plastics mfg and processing; explosive (propellant) component
۷.	suitable for food packaging application (FDA); dye application agent; diluent in
	polysulfide dental impression materials solvent; wetting agent; camphor substitute,
	perfumery, alcohol denaturant, component in ir secticidal sprays; mosquito repella
3.	. Gross estimate of annual discharge: 200 tons (method 2).
B. Tr	reatment Point Source (Water and Air)
1.	 Waste treatments/disposal (sewage and solids): Compound not formed during sewage
	treatment/solid waste disposal. Released to air during incineration of municipal
	refuse, general industrial rubbish, and waste sladges and slurries from plastic
	production and other manufacturing processes above.
2	Detailing the state of the stat
۷.	Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment.
	rearment.
C. N	lon-Point Source:
1.	. Natural None.
2.	. Chemical reactions None identified.
3	. Solid waste leachate Leaches from municipal and industrial wastes containing
٠.	plastics.
,	
4.	. Man caused non-point source General use of glastics and above listed products.
4.	(leaches from tubings, dishes, paper, container, etc.) Lab use, microcontanminant
4.	(leaches from tubings, dishes, paper, container, etc.) Lab use, microcontanminant in lab chemicals, food, detergents, etc. Also from evaporates from perfumes, inks,
4.	(leaches from tubings, dishes, paper, container, etc.) Lab use, microcontanminant in lab chemicals, food, detergents, etc. Also from evaporates from perfumes, inks, insecticides, repellants, alcohols and dyes. From combustion of rocket propellants
	(leaches from tubings, dishes, paper, container, etc.) Lab use, microcontanminant in lab chemicals, food, detergents, etc. Also from evaporates from perfumes, inks, insecticides, repellants, alcohols and dyes. From combustion of rocket propellants and explosives.
Biodeg	(leaches from tubings, dishes, paper, container, etc.) Lab use, microcontanminant in lab chemicals, food, detergents, etc. Also from evaporates from perfumes, inks, insecticides, repellants, alcohols and dyes. From combustion of rocket propellants

1. (Chemical: <u>di(2-ethyl hexyl) phthalate</u> CAS Nomenclature:	2. Structure:
3. (Class: phthalate ester	C-O-CH=CH-(CH2)3-CH
	Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry	O CH-CH
	2. Users: Plasticizer mfg; plastics mfg and red	cycling, processing; organic pump fluid.
į	3. Gross estimate of annual discharge: 4,000 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solid treatment/solid waste disposal Released to refuse, general industrial rubbish, and waste duction and other manufacturing processes of	ds): Compound not formed during sewage o air during incineration of municipal te sludges and slurries from plastic pro-
	2. Drinking water treatment (e.g., chlorinatio treatment.	on): Not formed during drinking water
(C. Non-Point Source: 1. Natural None.	
	2. Chemical reactions None identified.	
	3. Solid waste leachate Leaches from municipal	
5. 1	4. Man caused non-point source General use (leaches from tubings, dishes, paper, conto Biodegradability (persistence): Persistence greater the	niners, etc.) Lab Use, microcontaminant
_	Compound is degraded slowly by biological organism up and concentrated by them (category 5).	ms and is taken detergents, etc.
6.	Effective treatment method: Activated carbon (90-1	00%); incineration (greater than 99%).

	mical: dihexyl phthalate Nomenclature:	2. Structure:
	s: phthalate ester	$\frac{1}{C-O-(CH_z)-CH_3}$
Sour		$\begin{array}{c c} & & & & & & & & & & & \\ & & & & & & & $
	2. Users: Plasticizer mfg, plastics mfg recycling and vinyl plastics).	g and processing (esp. cellulose ester
В.	 Gross estimate of annual discharge: 100 tons Treatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids treatment/solid waste disposal. Released to refuse, general industrial rubbish, and waste duction and other manufacturing processes at 2. Drinking water treatment (e.g., chlorination) 	s): <u>compound not formed during sewage</u> air during incineration of municipal e sludges and slurries from plastic pro- bove.
c.	Non-Point Source: 1. Natural None.	
	2. Chemical reactions None identified. 3. Solid waste leachate Leaches from municipal	and industrial wastes containing plastic
Col	4. Man caused non-point source General use of (leaches from tubings, dishes, paper, contain legradability (persistence): Persistence greater the mpound is degraded slowly by biological organism and concentrated by them (category 5).	ners, etc.) Lab use, microcontaminant i an 18 mos. lab chemicals, food,
. Effe	ctive treatment method: Activated carbon (90-10	00%); incineration (greater than 99%).

Chemical.	2. Structure:
CAS Nomenclature:	/ -0
Class: ketone (cyclic alkane derivative)	
Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: No information.	CH3 EH2
2. Users: No information.	
3. Gross estimate of annual discharge: 3 tons (method) B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): N	
2. Drinking water treatment (e.g., chlorination): _!	No information .
C. Non-Point Source: 1. Natural No information - very similar to carvor caraway, and spearmint oils. Possible degradan	ne, which occurs in dill, t or co-metabolite of carvone.
2. Chemical reactions None identified.	
2. Chemical reactions None identified. 3. Solid waste leachate No information.	
•	
3. Solid waste leachate No information.	18 months) (category 4) .

Chemical: _	di-isobutyl carbinol	2. Structure:
CAS Nomer	nclature: 108-82-7	$ CH_3$ CH_3
Class: c	Jeshol	— СН3 СН3 — СН-СН-СН2-СН-СН2-СН-
	(ICOIO)	
Sources: A Industry	Point Source (Water and Air)	
1. Mai	nufacturers: Organic chemical industry.	
		
2. Use	rs: Defoamer; reaction medium for production of	of hydrogen peroxide; surface-
	ive agents; lubricant additives; rubber chemi als	
-		
3. Gro	oss estimate of annual discharge: 300 tons (me	ethod 7),
	ent Point Source (Water and Air)	
1. Wa	ste treatments/disposal (sewage and solids): <u>N</u>	o information .

-		
	nking water treatment (e.g., chlorination): Pro	bably not formed during
drif	nking water treatment.	
	pint Source:	
1. Na	tural None	
Propage Salarona		
difficultive of		
2. Che	emical reactions None identified	
2 5-1	id waste leachate Will leach from solid wastes	in which it is a contituent
3, 301	da waste leachate	o iii wiiicii ii sa constituent.
4. Ma	n caused non-point source General laboratory	y use.
- Palamagan		
Biodegradal	pility (persistence): Low persistence (~3 months	to degrade) (category 2).
Effective tr	eatment method: Biological treatment; ac ivat	red carbon (90~100%)

	cal: <u>di-isobutyl phthalate</u> lomenclature:	2.	Structure:
			C-0-CH_CH-CH C-0-CH_CH-CH
_	phthalate ester		4.1
	s: dustry Point Source (Water and Air) Manufacturers: Organic chemical industry		C-O-CH _Z -CH-CH O CH ₃
2.	Users: Plasticizer mfg; plastics mfg, recycling and p	processi	ng,
B. Tre	Gross estimate of annual discharge: 100 tons (methode eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Compared treatment/solid waste disposal. Released to air dur	pound i	ineration of municipal
	duction and other manufacturing processes above. Drinking water treatment (e.g., chlorination): Not		
2.	treatment.	formed	l during drinking water
C. No		formed	during drinking water
C. No 1.	on-Point Source:	formed	during drinking water
C. No 1. 2. 3.	on-Point Source: Natural None Chemical reactions None identified. Solid waste leachate Leaches from municipal and in plastics. Man caused non-point source General use of plastic	ndustria cs and	L wastes containing above listed products.
C. No. 1. 2. 3. 4. Biodeg	on-Point Source: Natural None Chemical reactions None identified. Solid waste leachate Leaches from municipal and in plastics. Man caused non-point source General use of plastic (leaches from tubings, dishes, paper, containers, expradability (persistence): Persistence greater than 18 responses.	ndustria cs and cetc.) Lo	L wastes containing above listed products, ab use, microcontaminant
C. No. 1. 2. 3. 4. Biodeg Comp	on-Point Source: Natural None Chemical reactions None identified. Solid waste leachate Leaches from municipal and in plastics. Man caused non-point source General use of plastic (leaches from tubings, dishes, paper, containers, experience of the source of the sourc	ndustria cs and cetc.) Lo	L wastes containing above listed products, ab use, microcontaminant

CASN	al: 1, 2- dimethoxy benzene omenclature: 91-16-7	2. Structure:
CA3 11	omenciarore. 71-10-7	0-СН3
Class: _	non-halogenated ether	
Sources		
A. Ind	ustry Point Source (Water and Air) Manufacturers: Organic chemical industry.	
•		
2.	Users: Mfg. flavors and perfumes; medicine (an	iseptic - veratrole).
3.	Gross estimate of annual discharge: 30 tons (me	rhod 6).
B. Tre	atment Point Source (Water and Air)	
1.	Waste treatments/disposal (sewage and solids):	Not formed during sewage treatme
	or biological degradation of solid wastes.	
2.	Drinking water treatment (e.g., chlorination):	Not formed during drinking water
-	n-Point Source:	
1.	Natural None.	
2	Chemical reactions None identified.	
3.	Solid waste leachate Leaches from solid wastes	in which it is a constituent.
4.	Man caused non-point source Laboratory cheric evaporation from perfumes.	cal use, use a s a medicinal,
Biodegi	adability (persistence): Moderate persistency (:a	itegory 3).

Cla		aryl alkane	
	rces:		CH.
	_	ustry Point Source (Water and Air)	3
	1.	Manufacturers: Petroleum refining; coke proc	essing.
	2.	Users: Impurity in naphthalene and its subsequent naphtha constituent.	ent uses; asphalt constituent;
	3.	Gross estimate of annual discharge: 10 tons (m	nethod 3).
в.		atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): or degradation of solid wastes. Incineration of and combustion of fuels will release this compo	organic petroleum or coal wastes
	2.	Drinking water treatment (e.g., chlorination): water treatment.	V
c.	No		V
с.	No	water treatment.	V
c.	No 1.	water treatment. n-Point Source: Natural Petroleum, coal tar. Chemical reactions None identified.	V
	No 1. 2. 3.	water treatment. n-Point Source: Natural Petroleum, coal tar. Chemical reactions None identified. Solid waste leachate Will leach from solid waste as a constituent. Man caused non-point source General uses of laboratory use; use as a solvent; evaporation from	Not produced during drinking astes in which compound is present asphalt and naphtha; general am moth balls.
	No 1. 2. 3.	water treatment. n-Point Source: Natural Petroleum, coal tar. Chemical reactions None identified. Solid waste leachate Will leach from solid was a constituent. Man caused non-point source General uses of	Not produced during drinking astes in which compound is present asphalt and naphtha; general am moth balls.

ustry Point Source (Water and Air) Manufacturers: Coal tar fractionation; coa	tioxicants; pharmac mfg: solvent mfg; i de, wetting agent, tons (method 6). ids): small quantitie degradation of municineration of munic	nsecticides and fungicidyestuffs; cresylic acides es formed during sewag
Users: Intermediate in mfg. of phenolic and resins mfg.; disinfectant (microbicide rubber chemicals, mfg. polyphenylene ox constituent. Gross estimate of annual discharge: 100 eatment Point Source (Water and Air) Waste treatments/disposal (sewage and so treatment (biological step) and biological industrial wastes. Released to air during i	tioxicants; pharmac mfg: solvent mfg; i de, wetting agent, tons (method 6). ids): small quantitie degradation of municineration of munic	nsecticides and fungicidyestuffs; cresylic acides es formed during sewag
Users: Intermediate in mfg. of phenolic and resins mfg.; disinfectant (microbicide rubber chemicals, mfg. polyphenylene ox constituent. Gross estimate of annual discharge: 100 atment Point Source (Water and Air) Waste treatments/disposal (sewage and so treatment (biological step) and biological industrial wastes. Released to air during in	tioxicants; pharmac mfg: solvent mfg; i de, wetting agent, tons (method 6). ids): small quantitie degradation of municineration of munic	nsecticides and fungicidyestuffs; cresylic acides es formed during sewag
Users: Intermediate in mfg. of phenolic and resins mfg.; disinfectant (microbicide rubber chemicals, mfg. polyphenylene ox constituent. Gross estimate of annual discharge: 100 eatment Point Source (Water and Air) Waste treatments/disposal (sewage and so treatment (biological step) and biological industrial wastes. Released to air during in	tioxicants; pharmac mfg: solvent mfg; i de, wetting agent, tons (method 6). ids): small quantitie degradation of municineration of munic	nsecticides and fungicidyestuffs; cresylic acides es formed during sewag
and resins mfg.; disinfectant (microbicide rubber chemicals, mfg. polyphenylene ox constituent. Gross estimate of annual discharge: 100 eatment Point Source (Water and Air) Waste treatments/disposal (sewage and so treatment (biological step) and biological industrial wastes. Released to air during i	mfg: solvent mfg; ide, wetting agent, tons (method 6). ids): small quantitiedegradation of municineration of municinerat	nsecticides and fungicidyestuffs; cresylic acides es formed during sewag
watment Point Source (Water and Air) Waste treatments/disposal (sewage and source treatment (biological step) and biological industrial wastes. Released to air during in	ids): mall quantitied degradation of municine ration rat	icipal, biological, and
watment Point Source (Water and Air) Waste treatments/disposal (sewage and source treatment (biological step) and biological industrial wastes. Released to air during in	ids): mall quantitied degradation of municine ration rat	icipal, biological, and
treatment (biological step) and biological industrial wastes. Released to air during i	degradation of municineration of munic	icipal, biological, and
Drinking water treatment (e.g., chlorinate purification, probably formed in small que		of formation during wa
on-Point Source:		
Natural Coal		
Chemical reactions None identified.		
Solid waste leachate Leaches from munic	ipal, industrial wast	es containing the
material. Also formed by degradation of han caused non-point source Asphalt and	igh molecular weigh roa way runoff; ge	ht tars and polymers. meral use of pharma-
radability (persistence): Low persistence (~	2 months for comple	te degradation) sew
•	purification, probably formed in small quantum probably formed by dentified. Solid waste leachate Leaches from municum probable	purification, probably formed in small quantities. n-Point Source: Natural Coai Chemical reactions None identified. Solid waste leachate Leaches from municipal, industrial wast material. Also formed by degradation of high rolecular weighted Man caused non-point source Asphalt and roa way runoff; ge ceuticals, fuels, plastics, pesticides; washing of dyed material adability (persistence): Low persistence (~2 months for complete egory 3).

1.		nical: dimethyl phthalate Nomenclature:	2.	Structure:
3.	Cla	5: phthalate ester		C-0-CH3
	Sou	• 1		С-0-СН3
	В.	 Users: Plasticizer mfg.; plastics mfg. and processing; base rocket propellant; latex mfg; cellulose acetate in mfg. of poly(vinylidene fluoride); plasticizer in cresins, rubber; constituent of lacquers, plastics rubber, molding powders, insect repellants, perfumes. Gross estimate of annual discharge: 100 tons (method Treatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Compote treatment/solid waste disposal. Released to air durin refuse, general industrial rubbish, and waste sludges duction, and other manufacturing processes above. Drinking water treatment (e.g., chlorination): Not for treatment. 	film ellu per, 7). und g in and	mfg; fluidized-bed coating close acetate and nitrocellulose coating agents, safety glass, not formed during sewage acineration of municipal d slurries from plastic pro-
	С.	Non-Point Source: 1. Natural None.		
		2. Chemical reactions None identified.		
		3. Solid waste leachate <u>Leaches from municipal and indi</u>		
5.	<u></u> C	4. Man caused non-point source <u>General use of plastics</u> (leaches from tubins, dishes, paper, containers, etc egradability (persistence): <u>Persistence greater than 18 monopounds is degraded slowly by biological organisms and in and concentrated by them (category 5).</u>	.) L s.	ab use, microcontaminant in lab chemicals, food,
6.	Effe	ctive treatment method: Activated carbon (90-100°); inc	nce	eration (greater than 99%).

CAS	s No	al: <u>dimethyl sulfoxide</u> omenclature. 67-68-5	2. Structure:
hayana aliva -	********		CH3-S-CH3
Clos	۶s: <u>ــ</u> ــ	mercaptans and other sulfur organics	
Sour			
Α.		ustry Point Source (Water and Air)	
	1.	Manufacturers: By-product of wood pulp mfg. f	
		organic chemical industry.	
	2.	Users: Salveni for acetylene SO2, other gass	· pharmoceutical mfa · antifree
		hydrodic fluid mig.; paint and va.nish remover;	solvent for polymerization and
		cyanide waction, an dytical reagant, synthetic	fibers mfg.; industrial cleaners
		pesticide rafg.; preservation of cells at low temp	aratures .
	3.	Gross estimate of annual discharge: 600 tons (n	ethod 6).
В.	Tre	atment Foint Source (Water and Air)	
	١.	Waste iteatments/disposal (sewage and solids): or biological decomposition of solid wastes.	Not produced during sewage tre
		of bledograph at composition of sorta wastes.	
	2	Drinking water treatment (e.g., chlorination):	Not formed during dripking water
	۷.	treatment.	The former control of the first control of the firs
			inga mar tim kantungan gapan gagan gapan gaban na gapan kantun kantun kantun kantun kantun dari kantun kantun sagar m
С.	No	n-Point Source:	
	1.	Natural None .	magamin ir inigarityopiniyassayashangiya kirimtayasiininggaya yaqangi ayabiriya ayabiriya i
	2.	Chamical reactions <u>Dimethyl sulfide</u> (from soi exitation dimethyl sulfoxide	il and water microorganism)
	3.	Solid waste teachate Will leach from solid was	tes in which from is a constituer
	4.	Man caused non-point source General the as e.	laboratory chemical, solveni.
Find	door	paint and varnish remover, cleaner, pesticide, nadability (persistence): Very difficult to degrae	and the second of the second o
DIVI	re Air	determine the services. Ask difficult to dedice.	(caregory 4).
		ve treatment method: <u>Activated carbon</u> .	

CAS N	al: 4,6 - dinitro - 2-amino pheno	2. Structure:
	omenclature: 96-91-3	<u></u>
		ON NH
Class:	phenol	
Sources		
	ustry Point Source (Water and Air)	NO ₂
	Manufacturers: Organic chemica	l industry
••		T Hiddsity :
		وروي ويونو والموادي والموادية والموا
2.	Users: Mfg. red hair preparations	; pesticides mf; .; mfg. azo dyes, indicators;
	· r · u ·	, , ,
2		20
	Gross estimate of annual discharge	
	atment Point Source (Water and Air	
ι.	Waste treatments/disposal (sewage	and solids): robably not formed during sewag
	treatment or biological degradation	n or solid wastes.
2	Drinking water treatment (e.g. cl	hlorination): Not formed during drinking water
۷.	L., L.,	
	neamen.	
C. No	n-Point Source:	
1.	Natural None .	
0	Classic Name Heart	ic:
2.	Chemical reactions None identi	ified.
		ified. from solid wastes in which it is a constituent.
3.	Solid waste leachate Will leach	from solid wastes in which it is a constituent.
3.		from solid wastes in which it is a constituent.
3. 4.	Solid waste leachate Will leach	from solid wastes in which it is a constituent.
3. 4.	Solid waste leachate Will leach	from solid wastes in which it is a constituent.
3. 4.	Solid waste leachate Will leach	from solid wastes in which it is a constituent.
3. 4.	Solid waste leachate Will leach	from solid wastes in which it is a constituent.
3. 4. Biodeg	Solid waste leachate Will leach	from solid wastes in which it is a constituent. neral lab use, use as a colorant. actory and difficult to degrade (category 5).

	 155:	nitro benzene derivative
Sou	rces	
	-	lustry Point Source (Water and Air)
	1.	Manufacturers: Explosives mfg.; organic chemical industry.
	^	
	2.	Users: Mfg. TNT; mfg. urethane polymers; mfg. flexible and rigid foams and surface coatings; mfg. dyes; organic synthesis.
		surface coarrings; mig. ayes; organic sym lesis.
	વ	Gross estimate of annual discharge: 300 tons (nethod 6).
В.		eatment Point Source (Water and Air)
٠.		Waste treatments/disposal (sewage and solids): Possibly formed in small
		quantities by bacterial action during sewage treatment or decomposition of
		solid wastes.
	2.	Drinking water treatment (e.g., chlorination): Not formed during drinking water
		treatment
c.		on-Point Source:
	1.	Natural None.
	2	Chemical reactions None identified,
	2.	
	3.	
		Solid waste leachate Will leach from wastes in which compound is present.
Rio	3.4.	Solid waste leachate Will leach from wastes in which compound is present. Man caused non-point source Combustion of explosives (minor); general lab use
Bio	3.4.	Solid waste leachate Will leach from wastes in which compound is present.
Bio	3.4.	Solid waste leachate Will leach from wastes in which compound is present. Man caused non-point source Combustion of explosives (minor); general lab use
-	3. 4.	Solid waste leachate Will leach from wastes in which compound is present. Man caused non-point source Combustion of explosives (minor); general lab use

U	nical: <u>dioctyl adipate</u> Nomenclature:	CH3-(CH2)-0-C-(CH2)-C-0
Class:	: alkyl ester	27 0 0 24
Source		inguis committee parties and the second seco
A. Ir	ndustry Point Source (Water and Air)	
. 1	. Manufacturers: Organic chemical industry.	
2	2. Users: Plasticizer mfg.; plastics mfg. and proces	ss ng; plasticizer for cellulose-based
	liquid lipsticks; commonly blended with DOP and	DIOP in processing polyvinyl and
	other polymers; solvent; aircraft cubes.	
၁	2 Constitute of appeal disabaracy 10.	.1 10)
	 Gross estimate of annual discharge: 10 tons (m Ireatment Point Source (Water and Air) 	thod 2).
	 Waste treatments/disposal (sewage and solids): C 	"amnound not formed during sewage
•	treatment/solid waste disposal. Released to air d	
	general industrial rubbish, and waste sludges and	
	other manufacturing processes above.	
2	2. Drinking water treatment (e.g., chlorination):	Not formed during drinking water
	treatment.	
c. 1	Non-Point Source:	
	1. Natural None.	
2	2. Chemical reactions None identified.	
3	3. Solid waste leachate <u>Leaches from municipal as</u>	nd industrial wastes containing plasti
ı,	4. Man caused non-point source General use of plan	estics and above listed products
4	(leaches from tubings, dishes, paper, containes	sites and above tisted products.
4	ijedejjes ijojij iopings, aisnes, babet, comanie.	s, etc.) Lab use, microcontaminant i
4		
4	lab chemicals, food, detergents, etc; general use lipsticks, application of paints and coatings.	

····	emic	al: dipropyl phthalate	2. Structure:
		omenclature:	- - Ω
			C-O-CH_CH_CH_CH_CH_CH_CH_CH_CH_CH_CH_CH_CH_C
Cla	ss: <u>p</u>	hthalate ester	- []
Sou	rces	:	C-O-CH2-CH2-CH3
Α.		lustry Point Source (Water and Air)	Ö
	1.	Manufacturers: Organic chemical industry.	
	2.	Users: Plasticizer mfg; plastics mfg. and processing.	
	3.	Gross estimate of annual discharge: 100 tons (method	4 7).
В.		eatment Point Source (Water and Air)	
٠.		Waste treatments/disposal (sewage and solids): Somp	yound not formed during sewage
	. •	treatment/solid waste disposal. Released to air dui	
		refuse, general industrial rubbish, and waste sludg	es and slurries from plastic pro-
		duction and other manufacturing processes above.	es and sionnes nom prastic pro
	2.	Drinking water treatment (e.g., chlorination): Not	formed during drinking water
		treatment.	
	No	on-Point Source:	
C .		Natural None.	
	. •	1 Volle.	
	•		
	2.	Chemical reactions None identified.	
	3.	Solid waste leachate Leaches from municipal and in	dustrial wastes containing
		plastics.	
	A	Man caused non-point source General use of £ astic	
	4.		s and above listed products.
		(leaches from tubings, dishes, paper, contair ers, e	etc.) Lab use, microcontaminant
	degr	radability (persistence): Persistence greater thar 18 m	etc.) Lab use, microcontaminant os. in lab chemicals, fo
Co	degr mpo	radability (persistence): <u>Persistence greater than 18 mound is degraded slowly by biological organisms and is</u>	etc.) Lab use, microcontaminant os. in lab chemicals, fo
Co	degr mpo	radability (persistence): Persistence greater thar 18 m	etc.) Lab use, microcontaminant os. in lab chemicals, fo
C o	degr mpo and	radability (persistence): <u>Persistence greater than 18 mound is degraded slowly by biological organisms and is</u>	etc.) Lab use, microcontaminant os. in lab chemicals, fo taken detergents, etc.

1.				2. Structure:
	CA	S No	omenclature: <u>629-97-0</u>	$CH_{3}-(CH_{2})_{\frac{1}{20}}CH_{3}$
3.	Cla	ıss: u	unsubstituted alkane	3
		rces:		
	Α.	Indu	lustry Point Source (Water and Air)	
		1.	Manufacturers: Petroleum refining.	
				all - section - New York (Section - Makes and Makes) (Makes) (
		2.	Users: Organic synthesis; standardized hydrocarbon; mfg	. paraffin products; rubber
			industry; paper processing industry; paraffin industry; cal	
			device. Constituent in waterborne waste of polyolefin r	
		2	Gross estimate of annual discharge: 300 tons (method	7\
	В.		eatment Point Source (Water and Air)	7).
	D.		Waste treatments/disposal (sewage and solids): <u>Fiot form</u>	mod during sourge troatment
			or decomposition of solid wastes. Incineration of municipal munici	
			and slurries containing petroleum constituents releases the	
		,	and storres comarring perforesin construents resistance in	
		2.	Drinking water treatment (e.g., chlorination): Not form	ned during drinking water
			purification.	
	С.	No	on-Point Source:	
	٠.		Natural Constituent in paraffin fraction of petroleum.	
		2	Charitan name tions No. 11 1100 1	
		۷.	Chemical reactions None identified.	
		3.	Solid waste leachate Will leach from general municip	and industrial solid wastes
			and will leach from solid sludges and slurries c petrole	eum refining industry and
			paraffin utilizing industries, and wastes in which n-doc	cosane is a solvent.
		4.	Man caused non-point source Component in aunicipa	waste and wastewater from
			general use of paraffins. Also laboratory use, sighway	runoff, automobile exhaust,
			motorboat exhaust, and from general use of pe roleum o	
5.	. Bi	odeg	gradability (persistence): Low persistence (1-2 nonths fo	or complete degradation)
,			egory 2)	
6.			ive treatment method: Biological treatment (80-75%); ac	ctivated carbon (90–100%);
	ir	ncine	eration (>99%).	

CAS N	cal: n-dodecane	2. Structure:	
	lomenclature:	$ CH_3-(CH_2)_{10}-CH_2$	
Class:	unsubstituted alkane	_	
Source			
	dustry Point Source (Water and Air)		
1.	Manufacturers: Refineries running alkylations, pet	roleum refining industry.	
2.	Users. Organic synthesis; solvent; standardized hyd	rocarbon; jet fuel research; mfg	
	paraffin products; rubber industry; paper processing	industry; distillation chaser.	
	Constituent in waterborne waste of polyolefin manu	<u>ufacture.</u>	
3.	Gross estimate of annual discharge: 600 tons (method	od 3).	
B. Tr	eatment Point Source (Water and Air)		
1.	Waste treatments/disposal (sewage and solids): 1401		
	decomposition of solid wastes. Incinceration of roun	icipal waste and industrial slud	
	and slurries containing petroleum constituents releas	ses this compound to the air.	
2.	Drinking water treatment (e.g., chlorination): Not	t formed during drinking water	
	purification.		
	potiti contoni.		
C N	on-Point Source:		
-	Natural Constituent in paraffin fraction of petrole		
	Constituent in paratitive paratit	um.	
Ι,		um.	
Ι,		um.	
	Chemical reactions None identified	um.	
	Chemical reactions None identified.	Um.	
2.	Solid waste leachate Will leach from general nun	icipal and industrial solid wast	
2.	Solid waste leachate Will leach from general nun and will leach from solid sludges and slurries of pet	icipal and industrial solid wastroleum refining industry and	
2. ·	Solid waste leachate Will leach from general nun and will leach from solid sludges and slurries of pet paraffin utilizing industries, and wastes in which ne	icipal and industrial solid wastroleum refining industry and -dodecane is a solvent.	
2. ·	Solid waste leachate Will leach from general nun and will leach from solid sludges and slurries of pet paraffin utilizing industries, and wastes in which no Man caused non-point source Component in minicipal source.	icipal and industrial solid waste roleum refining industry and -dodecane is a solvent. Ipal waste and wastewater from	
2. ·	Solid waste leachate Will leach from general nun and will leach from solid sludges and slurries of pet paraffin utilizing industries, and wastes in which no Man caused non-point source Component in manicipal general use of paraffins. Also laboratory use, igh	icipal and industrial solid waster roleum refining industry and -dodecane is a solvent. pal waste and wastewater from way runoff, automobile exhaust	
2. 3. 4.	Solid waste leachate Will leach from general numand will leach from solid sludges and slurries of pet paraffin utilizing industries, and wastes in which not man caused non-point source Component in minicipal general use of paraffins. Also laboratory use, igh motorboat exhaust, and from general use of per oler	icipal and industrial solid waste roleum refining industry and -dodecane is a solvent. Ipal waste and wastewater from way runoff, automobile exhaust um oils, tars, etc.	
2. 3. 4.	Solid waste leachate Will leach from general numand will leach from solid sludges and slurries of pet paraffin utilizing industries, and wastes in which named an edge of paraffins. Also laboratory use, igh motorboat exhaust, and from general use of per olemandability (persistence): Low persistence (1-2 month	icipal and industrial solid wast roleum refining industry and -dodecane is a solvent. Ipal waste and wastewater from way runoff, automobile exhaust um oils, tars, etc.	
2. 3. 4. Biodeg	Solid waste leachate Will leach from general numand will leach from solid sludges and slurries of pet paraffin utilizing industries, and wastes in which not man caused non-point source Component in minicipal general use of paraffins. Also laboratory use, igh motorboat exhaust, and from general use of per oler	icipal and industrial solid wasteroleum refining industry and dodecane is a solvent. Ipal waste and wastewater from way runoff, automobile exhaustum oils, tars, etc. s for complete degradation)	

	cal: eicosane	2. Structure:
CAS I	Nomenclature: 112-95-8	$ \rho_{H_3}$ $ (CH_2)_{10}$ $ CH_3$
Class:	unsubstituted alkane	
Source		
	dustry Point Source (Water and Air)	
1.	Manufacturers: Petroleum refining.	
2	0.9407	
	paraffin products; rubber industry; paper processing	
	plasticizers. Constituent in waterborne waste of po	olyoletin manutacture.
3	. Gross estimate of annual discharge: 300 tons (metho	d 7).
B. Ti	reatment Point Source (Water and Air)	
1	 Waste treatments/disposal (sewage and solids): Not 	
	or decomposition of solid wastes. Incineration c. m	
	sludges and slurries containing petroleum constitue	nts releases this compound to the
	_air.	
2	. Drinking water treatment (e.g., chlorination): No	ot formed during drinking water
	purification.	
c. N	Non-Point Source:	
1	. Natural Constituent in paraffin fraction of petroleu	Jm.
2	. Chemical reactions None identified.	
3	. Solid waste leachate Will leach from general mun	icipal and industrial solid waste
	and will leach from solid sludges and slurries of petr	oleum refining industry and
4	paraffin utilizing industries, and wastes in which ei	cosane is a solvent.
4	. Man caused non-point source Component in munic general use of paraffins. Also laboratory use, highw	
	motorboat exhaust, and from general use of persoleu	
Biode	gradability (persistence): Low persistence (1-2 month	
	egory 2)	
		; activated carbon (90–100%);
incir	neration (>99%).	

	Industry Point Sc	A. .		C	
	1. Manufacture	•			Č.
2	2. Users: Inse	cticide, min	nor constituent in d	ieldri n .	
B. 7	Treatment Point 1. Waste treatr or degradat	Source (Wat ments/dispow on of solid v	al (sewage and soli <u>wastes Released t</u>	ds): Not forme	hod 5). ed during sewage treatmes containing material containing material containing material contains
2	2. Drinking wa		t (e.g., chlorinati		d during drinking water
C.	Non-Point Sour 1. Natural	ce: None			
:	2. Chemical re	actions E	poxidation of isodr	in forms endrin	
;	3. Solid waste	leachate V	VIII leach from soli	d wastes of whi	ch it is a constituent.
4	4. Man caused	non-point so	ource <u>Agricultural</u>	runoff; degrado	ation of isodrin. Lab use
Biode	egradability (pe	rsistence): P	<mark>ersi</mark> ste <mark>nt: app</mark> roxim	ately 3 years	(category 5).

Chemical: ethanol	2. Structure:
CAS Nomenclature: 64-17-5	
Cl alaskal	CH3-CH-OH
Class: alcohol	
Sources:	
A. Industry Point Source (Water and Air)	
1. Manufacturers: Alcohol, whiskey and gi	n mtg.; organic chemical industry; wood
products industry.	
2. Users: Mfg. acetaldehyde, acetic acid,	ethylacetate, ethylchloride, ethyl ether,
butadiene; ethylene dibromide; mfg. of p	harmaceuticals; plastics and plasticizers
mtg.; mtg. lacquers, polishes; mtg. perfu	umes, cosmetics; mfg. rubber; mfg. aerosols,
mouthwash products; alcoholic beverages	mfg.; mfg. soaps & cleaning preparations;
solvent, dye mfg.; explosives mfg.	000 A (Al - I 0)
3. Gross estimate of annual discharge: 60,0	out fors (method 2).
B. Treatment Point Source (Water and Air)1. Waste treatments/disposal (sewage and so	lide). Formed during highering decompositi
of sewage and readily decomposes. Form	ed during decomposition of solid biological
wastes, and is readily metabolized. For	ned by decomposition of industrial sludges
sturries from above identified users, when	compound is a component of those sludges
sturries, it is released to the air by surface	
2. Drinking water treatment (e.g., chloring	tion): Not produced during drinking water
treatment.	
C. Non-Point Source:	
1. Natural Fermentation of sugar, starch.	
2. Chemical reactions (Air) photo oxidation	of 1-butene (Water) 1-butene + HOCL -
ethanol.	OTT BOTONO. (Water) 1 Botono 110C.
3. Solid waste leachate Present in leachate	e from biological solid waste and industrial
studges/sturries where it is a reactant/unr	eacted product, & from solid wastes of above
4. Man caused non-point source Constituen	t in domestic wastes. Lab use. General use
drugs, medicinals, plastics, lacquers, po	lishes, perfumes, cosmetics, spray cans, etc
Biodegradability (persistence): Readily degraded	(1-2 weeks) (category 1). Water solubility
	f other items cause it to be virtually ever-
present in water.	
	(05 1000)
Effective treatment method: Biological treatme	

CAS	5 No	al: ethyl amine omenclature: 75-04-7	2. Structure:
			$ CH_3$ CH_2 NH_2
Clas	ss: _	aliphatic amine	
Sour			
		ustry Point Source (Water and Air)	
	١,	Manufacturers: Organic chemical industry	
	2.	Users: Resin mfg.; stabilizer for rubber latex pharmaceutical mfg.; solvent in petroleum and for mfg. amides; plasticizer; detergents mfg.;	d sgetable oil refining; raw materic
	3.	Gross estimate of annual discharge: 600 tons	(rethod 6).
В.	Tree	atment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids)	
		of sewage and solid wastes, but is in turn reach	degraded.
	2.	Drinking water treatment (e.g., chlorination) treatment.	: Not formed during drinking water
c.		n-Point Source: Natural Should occur naturally as amino ac	id degradant.
	2.	Chemical reactions Ethyl radical + hydrazi	na →ethylamine
	3.	Solid waste leachate Will leach from munici	pul wastes, wastes of biological original
		and from industrial sludges and slurries contain	ing compound.
		Man caused non-point source General use of chemical.	
Biod	legr	adability (persistence): Low persistence (1-2 m	onths for degradation) (category 2).

Chemical: ethylbenzene	2. 9	tructure:	CHZ CH
CAS Nomenclature: 100-41-4			
Class: aryl alkane (benzene derivative)			
Sources:			
A. Industry Point Source (Water and Air)			
1. Manufacturers: Petroleum refining; organic ch	iemical indu	stry.	
2. Users: Styrene mfg.; acetophenone mfg.; solve naphtha constituent.	ent; asphalt	constituent	
3. Gross estimate of annual discharge: 10,000 to	ns (method 1).	
B. Treatment Point Source (Water and Air)1. Waste treatments/disposal (sewage and solids):	Not produc	ed during s	ewage treat
or degradation of solid wastes. Incineration of combustion of fuels will release this compound			
COMPOSITOR OF TOERS WITH TEREGRE THIS COMPOUND	10 011		
2. Drinking water treatment (e.g., chlorination): treatment.			
2. Drinking water treatment (e.g., chlorination): treatment.			
2. Drinking water treatment (e.g., chlorination): treatment. C. Non-Point Source:			
2. Drinking water treatment (e.g., chlorination): treatment. C. Non-Point Source: 1. Natural Petroleum, coal. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from solid waste.	Not produc	ed during d	rinking wat
2. Drinking water treatment (e.g., chlorination): treatment. C. Non-Point Source: 1. Natural Petroleum, coal. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from solid waas a constituent. 4. Man caused non-point source General uses of a constituent.	Not produc	ed during d	rinking wat
2. Drinking water treatment (e.g., chlorination): treatment. C. Non-Point Source: 1. Natural Petroleum, coal. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from solid waste as a constituent.	Not produc	h compound	rinking wat
2. Drinking water treatment (e.g., chlorination): treatment. C. Non-Point Source: 1. Natural Petroleum, coal. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from solid waste a constituent. 4. Man caused non-point source General uses of a laboratory use; use as a solvent.	Not produc	h compound	rinking wat

	lomenclature:		СH ₂ -CH ₃ СH ₃ -CH-(CH ₂)-CH ₃
Class:	unsubstituted alkane		CH3-CH-(CH2)-CH3
Sources			
A. Inc	dustry Point Source (Wat	ter and Air)	
1.	Manufacturers: Pet	troleum refining.	
2.	Users: <u>Solvent and th</u>	inner; paraffin industry.	
3.	Gross estimate of annu	ual discharge: <u>60 tons (m</u>	ethod 3).
	eatment Point Source (W		
١.	Waste freatments/dispo	osal (sewage and solids): 👌	Not formed during sewage treatment
	and decomposition of	solid wastes. Incommittee	of municipal waste and industrial sl
	and sturries containing	petroleum constituents	this compound to the air.
	communicacy granuscure of the species and interest of a proper control of the composition and		
2,	Drinking water treatme	ent (e.g., chlorination):	Not formed during drinking water
	purification.		
C. N	on-Point Source:		
1.	Natural Constitue	ent in paraffin fraction of a	etroleum.
2	Charied rosetions	None identified	
2.	Chemical reactions	None identified.	
2. 3.		anna ana ang ang ang ang ang ang ang ang	municipal and industrial solid waste
•	Solid waste leachate and will leach from s	Will leach from genera olid sludges and slurries of	petroleum refining industry and
3.	Solid waste leachate and will leach from s paraffin utilizing ind	Will leach from genera olid sludges and slurries f ustries, and wastes in who	petroleum refining industry and th 2-ethyl-n-hexane is a solvent.
3.	Solid waste leachate and will leach from s paraffin utilizing ind Man caused non-point	Will leach from genera olid sludges and slurries from ustries, and wastes in which source. Component in m	petroleum refining industry and ch 2-ethyl-n-hexane is a solvent. unicipal waste and wastewater from
3.	Solid waste leachate and will leach from s paraffin utilizing ind Man caused non-point general use of paraffi	Will leach from general olid sludges and slurries of ustries, and wastes in who control to the source Component in manager ins. Also laboratory use	petroleum refining industry and ch 2-ethyl-n-hexane is a solvent. unicipal waste and wastewater from nighway runoff, automobile exhaust,
3.	Solid waste leachate and will leach from s paraffin utilizing ind Man caused non-point general use of paraffi motorboat exhaust, a	Will leach from genera solid sludges and slurries of ustries, and wastes in which source Component in mins. Also laboratory use and from general use of potential control of the state of the stat	ch 2-ethyl-n-hexane is a solvent. unicipal waste and wastewater from nighway runoff, automobile exhaust, coleum oils, tars, etc.
3. 4.	Solid waste leachate and will leach from s paraffin utilizing ind Man caused non-point general use of paraffi motorboat exhaust, a egradability (persistence	Will leach from genera solid sludges and slurries of ustries, and wastes in which source Component in mins. Also laboratory use and from general use of potential control of the state of the stat	petroleum refining industry and ch 2-ethyl-n-hexane is a solvent. unicipal waste and wastewater from nighway runoff, automobile exhaust,
3. 4. Biode (cat	Solid waste leachate and will leach from s paraffin utilizing ind Man caused non-point general use of paraffi motorboat exhaust, a	Will leach from general solid sludges and slurries of ustries, and wastes in who considers are component in many source. Component in many series. Also laboratory use and from general use of particles. Low persistence (1-2)	petroleum refining industry and the 2-ethyl-n-hexane is a solvent unicipal waste and wastewater from highway runoff, automobile exhaust, coleum oils, tars, etc.

Cla	155.	non-halogenated ether	
	rces		
	Ind	lustry Point Source (Water and Air) Manufacturers: None identified.	CH ₃ cis
	2.	Users: Constituent in waste of fiberglass of	and textile manufacturing industry.
В.	Tre	Gross estimate of annual discharge: 3 tons eatment Point Source (Water and Air) Waste treatments/disposal (sewage and soli or biological degradation of solid wastes.	
	2.	Drinking water treatment (e.g., chlorinati	on): Not formed during drinking water
c.	No		on): Not formed during drinking water
c.	No 1.	on-Point Source:	on): Not formed during drinking water
c.	No 1.	on-Point Source: Natural None.	
c.	No 1. 2.	n-Point Source: Natural None. Chemical reactions None identified.	stes containing fiberglass.
	No. 1. 2. 3. 4.	Chemical reactions None identified. Solid waste leachate May leach from was	stes containing fiberglass.

		non-halogenated ether	- CH ₂ CH ₃
Cla	ss: _	non-natogenated ether	
	rces:		OH,
Α.		ustry Point Source (Water and Air)	3 trans
	١.	Manufacturers: None identified.	
	2.	Users: Constituent in waste of fiberglass and wati	le manufacturing industry.
_		Gross estimate of annual discharge: 3 tons (me ho	d 6).
В.		atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): No or biological degradation of solid waster	ot formed during sewage treatmen
	2.	Drinking water treatment (e.g., chlorination): No treatment.	ot formed during drinking water
С.	No	n-Point Source.	
	1.	Natural None .	
	2.	Chemical reactions None identified.	
•	3.	Solid waste leachate <u>May leach from wastes</u> cont	aining fiberglass.
	4.	Man caused non-point source Fiberglass use.	
Biod	degr	adability (persistence): Very difficult to degrade (c	ategory 4).
-			

Chen	nical: o - ethyl toluene	2. Structure:
CAS	Nomenclature:	
Class	s: aryl alkane (benzene derivative)	CHZ-CH3
	ces: Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry	ry; petroleum refining industry.
;	2. Users: Mfg. dyes, medicinals, flavors, pasphalt and naphtha constituent.	
В.	 Gross estimate of annual discharge: 60 to Treatment Point Source (Water and Air) Waste treatments/disposal (sewage and solor degradation of solid wastes. Incineration combustion of fuels will release this composition. 	ids): Not produced during sewage treatme on of organic petroleum or coal wastes and
:	2. Drinking water treatment (e.g., chlorinat	
•	Non-Point Source: 1. Natural <u>Petroleum</u> .	
;	2. Chemical reactions None identified.	
	 Solid waste leachate <u>Will leach from sol</u> as a constituent. Man caused non-point source <u>General us</u> use; solvent use; perfume evaporation. 	
Biod	egradability (persistence): Difficult to degrad	e biologically (category 3).
	egradability (persistence): <u>Difficult to degrad</u> ctive treatment method: <u>Activated carbon (90</u>	

			O-CH ₃
Cla	ss: _	phenol	
Sou	rces		
Α.	_	ustry Point Source (Water and Air)	
	1.	Manufacturers: Organic chemical industry; wo	d processing industry.
	2.	Users: Mfg. perfumes and flavors (vanillin); rg	material for mfg. of papayerine
		(medicinal); mfg. catechol and guaiacol company	
	3.	Gross estimate of annual discharge: 10 tons (ma	thod 2).
В.	Tre	atment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids):	Not formed by waste treatment.
	2.	Drinking water treatment (e.g., chlorination): 1	Not formed during drinking water
		ileumem.	
c.		n-Point Source:	
	1.	Natural Wood; coal tar; major constituent of be	eechwood and creosote.
	2.	Chemical reactions None identified.	
•	3.	Salid wests log shots Disposal of ward as as it	
	٥,	Solid waste leachate Disposal of wood or coal the leach guaiacol, municipal wastes or industrial wastes are industrial wastes or indust	ars and their decomposition would astes, sludges or slurries where composited with the composited where composited where composited where composited with the composited where composited with the composited where composited wher
	4.		preser
		Use of perfumes, flavors (vanillin), medicinals	
Bio	degr	adability (persistence): Very difficult to degrace ((category 4).

CA:	5 Nc	menclatu									- Ciz	C	FI -CI		CI	Ç
Cla	ss:	cycli	c halogenate	ed o	alke	ne	· · · · · · · · · · · · · · · · · · ·			-		T,	\sum_{i}		O ₁	1160
		ustry Poin	t Source (Wa turers: <u>Pesti</u>			-						Ċ	Ĉ.		Cı	
	2.	Users:	Insecticide), 												
В.	Tre	atment Po	imate of anno int Source (V	Wat	ter a	_	r)								e tre	atme
		or degrae	dation of soli ted (e.g., m	id v	waste	es. R	<u>e leas</u>	ed to	air wh	en wo	stes	cont	ainir	ng m	ater	ial a
	2.	or degradincinera	dation of soli red (e.g., m water treatm	id v iuni	waste icipa t (e.	es. Roul refu	eleas use, so chlori	ed to e ewage	air wh	en wo	stes ndus med	cont trial durin	ainir sludo	ng m ges c	ater and s	ial ar Iurri
c.	No	or degradincinera	dation of soli red (e.g., mo water treatm ion.	id v iuni	waste icipa t (e.	es. Roul refu	eleas use, so chlori	ed to ewage	air wh	en wo	stes ndus med	cont trial durin	ainir sludo	ng m ges c	ater and s	ial ar Iurri
c.	No 1.	Drinking purificat n-Point S Natural	dation of soli red (e.g., mo water treatm ion.	id v	waste icipa t (e.	es. Roul refu	elease, so	ed to ewage	air wh	en wo	stes ndus med	cont trial durin	ainir sludo	ng m ges c	ater and s	ial ar Iurri
c.	No 1.	Or degradincineral Drinking purificat n-Point S Natural Chemica	dation of soli red (e.g., mo water treatm ion.	nent	t (e.	es. Roll refu	elease, so	ed to ewage	air wh	en wo	stes ndus med	durin	ainir sludq ng dr	inki	ng w	ial ar
c.	No 1. 2.	or degradincineral Drinking purificat n-Point S Natural Chemica	dation of solined (e.g., moved water treatmounts) ource: None	id v	waste icipa t (e . None	es. Real refu	elease, so	ed to ewage	mir wh	en wage, in	stes ndus med	during the state of the state o	ainir sludq ng dr	inki	ng w	ial ar
C.	No 1. 2. 3.	Drinking purificat n-Point S Natural Chemica Solid wa	dation of solined (e.g., more water treatmon. ource: None	nent	vaste icipa t (e.	es. Roll refu	chlori	ed to ewage	waste	en wo	med hicl	during during the state of the	ainir sludç ng dr	inki	ng w	ial ar

Class: cyclic halogenated alkene Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Pesticide mfg. 2. Users: Insecticide; also minor impurity in hepmochlar. 3. Gross estimate of annual discharge: Less than ton (method 5). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment or degradation of solid wastes. Release the provided industrial sludges and sluration in industrial sludges and sluration. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural None 2. Chemical reactions Heptachlor or chlordan can be epoxidized to form heptace epoxide. 3. Solid waste leachate Will leach from solid wastes of which it is a constituent. 4. Man caused non-point source Agricultural rule off. Lab use. Biodegradability (persistence): Persistent: approximately 3 years (category 5).		lomenclature: 1024-57-3	$\frac{1}{2}$ $\frac{1}{2}$
A. Industry Point Source (Water and Air) 1. Manufacturers: Pesticide mfg. 2. Users: Insecticide; also minor impurity in heptochlor. 3. Gross estimate of annual discharge: Less than ton (method 5). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): or degradation of solid wastes. Release the stream water wastes containing metalic! incinerated (e.g., municipal refuse, sewage, when wastes containing metalic! incinerated (e.g., municipal refuse, sewage, adjac, industrial sludges and slurr. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural None 2. Chemical reactions Heptachlor or chlordans can be epoxidized to form heptace epoxide. 3. Solid waste leachate Will leach from solid wastes of which it is a constituent. 4. Man caused non-point source Agricultural rule off. Lab use.			
3. Gross estimate of annual discharge: Less than ton (method 5). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment or degradation of solid wastes. Release the air when wastes containing material incinerated (e.g., municipal refuse, sewage, sindustrial sludges and slum. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural None 2. Chemical reactions Heptachlor or chlordant can be epoxidized to form heptace epoxide. 3. Solid waste leachate Will leach from solid wastes of which it is a constituent. 4. Man caused non-point source Agricultural rul off. Lab use.	A. Ind	dustry Point Source (Water and Air)	ci ci ci
 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment or degradation of solid wastes. Release to air when wastes containing material incinerated (e.g., municipal refuse, sewage, and industrial sludges and slurred.) 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural None 4. Man caused non-point source Agricultural run off. Lab use. 	2.	Users: Insecticide; also minor impurity in her	o÷pshlor.
2. Drinking water treatment (e.g., chlorination): Not formed during drinking water purification. C. Non-Point Source: 1. Natural None 2. Chemical reactions Heptachlor or chlordans can be epoxidized to form heptace epoxide. 3. Solid waste leachate Will leach from solid wastes of which it is a constituent. 4. Man caused non-point source Agricultural rul off. Lab use.	B. Tre	eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):	Not formed during sewage treatme
 Natural None Chemical reactions Heptachlor or chlordane can be epoxidized to form heptace epoxide. Solid waste leachate Will leach from solid wastes of which it is a constituent. Man caused non-point source Agricultural rul off. Lab use. 	2.	Drinking water treatment (e.g., chlorination)	
epoxide. 3. Solid waste leachate Will leach from solid wastes of which it is a constituent. 4. Man caused non-point source Agricultural rul off. Lab use.	C. No 1.		
		enoxide	
blodegradability (persistence).			
		politicio).	, - ,

CAS No	al: 1,2,3,4,5,7,7-heptachloronorbornene 2. Structure:
	omenclature: C_ C_
Class: _ Sources A. Ind	cyclic halogenated alkene : ustry Point Source (Water and Air)
	Manufacturers: Not manufactured directly. It is a bicyclochlorinated pesticide manufacturing by-product.
2.	Users: Insecticide (as by-product).
	Gross estimate of annual discharge: Less than 1 ton (method 5), atment Point Source (Water and Air)
1.	Waste treatments/disposal (sewage and solids): Possibly formed during oxidative photos sewage treatment and biological degradation of solid wastes, assuming chlorinate
2. C. No	of sewage treatment and biological degradation of solid wastes, assuming chlorinate bicyclo pesticides degrade to heptachloronorbornene. Drinking water treatment (e.g., chlorination): Possibly formed during drinking
2. C. No 1.	of sewage treatment and biological degradation of solid wastes, assuming chlorinate bicyclo pesticides degrade to heptachloronorbornene. Drinking water treatment (e.g., chlorination): Possibly formed during drinking treatment by oxidation of chlorinated bicyclo pesticides.

CA.	S No	omenclature: 118-74-1	CI L CI
Cla	ıs s:	halogenated benzene derivative	
Sou	rces		CI
Α.	Ind	ustry Point Source (Water and Air)	CI
	1.	Manufacturers: Organic chemical industry; by mfg.	-product of tetrachloroethylene
	2.	Users: Mfg. pentachlorophenol; mfg. wood pre (control of wheat bunt); used in production of ar	
	3.	Gross estimate of annual discharge: 1 ton (met	od 5).
В.		atment Point Source (Water and Air) Waste treatments/disposal (sowage and solids): sewage treatment or decomposition of solir was	Generally not formed during
	2.	Drinking water treatment (e.g., chlorination): chlorination.	Generally not formed during
с.		n-Point Source. Natural <u>None</u> .	
	2.	Chemical reactions Phenyl radical + chlorical	e →hexachlorobenzene.
		component.	al sludges/slurries of which it is a
	4.	Man caused non-point source General labora	ory use; agricultural runoff.
Bio	degr	adability (persistence): Persistent (>18 months) (category 5).

Class:	non-cyclic halogenated alkene	CI CI CI CI C-C-C-C-CI
Source A. Ir		
2	2. Users: Solvent for natural rubber, synthetic rub liquid,transformer liquid, and hydraulic fluid; w	er and other polymers; heat transfershing liquor for removing hydrocart
B. T	B. Gross estimate of annual discharge: <u>2 tons (me</u> reatment Point Source (Water and Air) . Waste treatments/disposal (sewage and solids): Not formed by biol solid wastes, or by incineration. Released to a	ogical decomposition of sewage or
	recirculation due to its volatility.	
2	recirculation due to its volatility. 2. Drinking water treatment (e.g., chlorination): process.	
C. N	recirculation due to its volatility. 2. Drinking water treatment (e.g., chlorination):	
C. N 1 2 3	recirculation due to its volatility. 2. Drinking water treatment (e.g., chlorination): process. Non-Point Source:	diene.

CAS Nomenclature: 58-87-9	2. Structure:
CAS Nomenciatore: 38-87-7	c_1
Class: cyclic halogenated alkane	
Sources:	CI CI
A. Industry Point Source (Water and Air)	Ċı
1. Manufacturers: Pesticide mfg.	
2. Users: Medicinal mfg. (scabicide); insectici	
3. Gross estimate of annual discharge: <1 ton (mark) B. Treatment Point Source (Water and Air)	ethod 5).
1. Waste treatments/disposal (sewage and solids):	Not formed during sewage treatme
2. Drinking water treatment (e.g., chlorination) treatment.	
C. Non-Point Source:	
treatment.	
C. Non-Point Source:	
C. Non-Point Source: 1. Natural None. 2. Chemical reactions Hexyl radical + chloris. 3. Solid waste leachate Will leach from industr	्य → he xachlorocyclohe xane .
C. Non-Point Source: 1. Natural None. 2. Chemical reactions Hexyl radical + chloris. 3. Solid waste leachate Will leach from industricemponent.	al sludges/slurries of which it is a
C. Non-Point Source: 1. Natural None. 2. Chemical reactions Hexyl radical + chloris. 3. Solid waste leachate Will leach from industr	al sludges/slurries of which it is a
C. Non-Point Source: 1. Natural None. 2. Chemical reactions Hexyl radical + chloris. 3. Solid waste leachate Will leach from industricomponent. 4. Man caused non-point source Agricultural rus	al sludges/slurries of which it is a off. Lab use.
C. Non-Point Source: 1. Natural None. 2. Chemical reactions Hexyl radical + chloris. 3. Solid waste leachate Will leach from industricomponent. 4. Man caused non-point source Agricultural rus	al sludges/slurries of which it is a off. Lab use.
C. Non-Point Source: 1. Natural None. 2. Chemical reactions Hexyl radical + chloris. 3. Solid waste leachate Will leach from industricemponent.	al sludges/slurries of which it is a off. Lab use. (category 5).

CA.) [46	omenclature: 67-72-1	
Clas	 ss:	non-cyclic halogenated alkane	- CI CI - CI-C-C-CI
	rces		ci ci
	-	ustry Point Source (Water and Air)	
		Manufacturers: Organic chemical industry	
	2	Users: Mfg. smoke candles and grenades; by-produc	t of industrial oblariantion
		processes; plasticizer for cellulose esters; minor use i	n rubber and insecticidal
		formulations; medicinal mfg.; moth repellant; retarded	
		fire extinguishing fluids mfg.; camphor substitute in	nitro cellulose solvent.
	3.	Gross estimate of annual discharge: 2,000 tons (met	thad 3)
В.		atment Point Source (Water and Air)	
•		Waste treatments/disposal (sewage and solids): Prod chlorination of sewage effluent prior to discharge. decomposition of sewage or solid waste or by inciner	Not formed during biological
		volatility and inefficient solvent recovery/recirculation	
	2.	Drinking water treatment (e.g., chlorination): Prod chlorination.	uced in very small quantities by
с.	No	n-Point Source:	
	1.	Natural None.	
	2.	Chemical reactions (Air) ethyl radical + chlorine → he HOCI → hexachloroethane + water.	xachloroethane; (Water) alkene
	3.	Solid waste leachate Will leach from municipal or	industrial wastes in which this
	,	compound is present.	
	4.	Man caused non-point source General use in vetering moth repellants, insecticides, and as a laboratory ch	nary medicine, fire extinguisher emical. General use of chlorin
Biod	degr	adability (persistence): Persistent (category 5).	wo

_	mical: hexadecane	2. Structure:
CAS	Nomenclature: <u>544-76-3</u>	CH3-(CH2)-CH3
Clas	s: unsubstituted alkane	
Sour	ces:	
Α.	Industry Point Source (Water and Air)	
	1. Manufacturers: petroleum refining.	
	2. Users: Organic synthesis; solvent; standardized	ydrocarbon; jet fuel research; mfg.
	paraffin products; rubber industry; paper proce	es, ng industry; reference for diesel
	fuels; solvent; organic intermediate. constitu	ect in waterborne waste of polyolefin
	manufacture.	
	3. Gross estimate of annual discharge: 500 tons	(r athod 3)
В.	Treatment Point Source (Water and Air)	(: sillou 3).
•	1. Waste treatments/disposal (sewage and solids)	: Not formed during sewage treatment
	or decomposition of solid wastes, Incirca have	
	and slurries containing petroleum constituents	
	2. Drinking water treatment (e.g., chlorination)	
	purification.	Nor formed during drinking water
	Doi in Carrona	
Ξ.	Non-Point Source.	
	1. Natural Constituent in paraffin fraction of p	etroleum.
	2. Chemical reactions None identified.	
٠	and the state of t	
	3. Solid waste leachate Will leach from gener	municipal and industrial solid wastes;
	and will leach from solid sludges and slurries paraffin utilizing industries, and wastes in w	
	4. Man caused non-point source Component in	
	general use of paraffins. Also laboratory use	
	motorboat exhaust, and from general use of p	
Bi	odegradability (persistence): Low persistence (1	- 2 months for complete degradation)
-	category 2)	
	fective treatment method: Biological treatment (ED-95%); activated carbon (90-100%);
i	ncineration (>99%).	
	fective treatment method: Biological treatment (ncineration (>99%).	tu-y5%); activated carbon (90-1009

.	cal: 2-hydroxyadiponitrile Nomenclature:		
	nitrile	-	ОН N≡С-Сн-(СН ₂)-С=
Source			
	dustry Point Source (Water and Air)		
1.	. Manufacturers: None identified.		
2.	. Users: None identified.		
	Gross estimate of annual discharge: 3 tons (method	6).	
	• Waste treatments/disposal (sewage and solids): No	inform	ation.
2.	Drinking water treatment (e.g., chlorination): No	inform	ation.
		inform	ation.
c. N	Drinking water treatment (e.g., chlorination): No Non-Point Source: Natural None.	inform	ation.
C. N 1.	Jon-Point Source:	inform	ation.
C. N 1.	Natural None. Chemical reactions None identified.	inform	ation .
C. N 1.	Natural None. Chemical reactions None identified. Solid waste leachate No information.		
C. N 1. 2. 3. 4.	Natural None. Chemical reactions None identified. Solid waste leachate No information.	se .	
2. 3. 4. Biodeg	lon-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate No information. Man caused non-point source General laboratory and the source of	se .	

Cla	s s:	unsubstituted aromatic
Sou	rces:	
Α.	Ind	ustry Point Source (Water and Air)
	1.	Manufacturers: Petroleum refining; coke processing.
	2.	Users: Paint and coating mfg.; tile mfg.; preparation of coumarone-indene resins chemical synthesis intermediate; asphalt and naphtha constituent.
		Gross estimate of annual discharge: 100 tons method 3).
В.		atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Not produced during sewage treat or degradation of solid wastes. Lucinera ion of organic petroleum or coal wastes,
	2.	Drinking water treatment (e.g., chlorination): Not produced during drinking water
c.		n-Point Source: Natural Coal, lignite, crude petroleum.
	2.	Chemical reactions None identified.
	3.	Solid waste leachate Will leach from solid wastes in which compound is present as a constituent.
		Man caused non-point source General uses of asphalt and naphtha; general laboratory use; use as a solvent.
Bio	degr	radability (persistence): Very difficult to degrade (category 4).

	uner	mical: Isodecane	2.	Structure:
(CAS	Nomenclature:		CH-CH-(CH2)-CH3
. (Class	ss: unsubstituted alkane		CH3-CH-(CH2)-CH3 CH3
. :	Sour	rces:		
-		Industry Point Source (Water and Air)		
	,	1. Manufacturers: Petroleum refining.		
				
		2. Users: Organic synthesis; solvent; mfg. paraffin pr	oducts;	rubber industry; paper
		processing industry. Constituent in waterborne wa		
		3. Gross estimate of annual discharge: 300 tons (me	thad (1)	,
	В. '	Treatment Point Source (Water and Air)	11100 4)	
l.		1. Waste treatments/disposal (sewage and solids): No	ot forme	d during sewage treatment
		or decomposition of solid wastes. Incineration of n		
		and slurries containing petroleum constituents rele		
		2. Drinking water treatment (e.g., chlorination): N	ot forme	ed during drinking water
		2. Drinking water treatment (e.g., chlorination): Natural purification.		
		purification.		
(с.	Non-Point Source:		
(с.	purification.		
•	с.	Non-Point Source:		
•	с.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro		
•	с.	Non-Point Source:		
•	c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro. 2. Chemical reactions None identified.	oleum.	
(c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petrocal reactions None identified. 3. Solid waste leachate Will leach from general results.	oleum.	Il and industrial solid wastes
(c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general mand will leach from solid sludges and slurries of	oleum. nunicipa	Il and industrial solid wastes
(c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general mand will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which	oleum. nunicipa petroleu	Il and industrial solid wastes Im refining industry and ane is a solvent.
•	c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general mand will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which the desired of the source of the	nunicipo petroleu n isodec	Il and industrial solid wastes om refining industry and ane is a solvent. waste and wastewater from
(c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general mand will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which the solid sludges and slurries of paraffin utilizing industries. Also laboratory use, here	nunicipo petroleu nisodecunicipal ighway	Il and industrial solid wastes om refining industry and ane is a solvent. waste and wastewater from runoff, automobile exhaust,
	c.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general mand will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which the second slurry use, has a laboratory use, has a laboratory use, has a laboratory use of petros.	nunicipo petroleu n isodec nicipal ighway	Il and industrial solid wastes om refining industry and ane is a solvent. waste and wastewater from runoff, automobile exhaust, ils, tars, etc.
5.	C.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general in and will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which the description of the paraffin serious of paraffins. Also laboratory use, how motorboat exhaust, and from general use of period idegradability (persistence): Low persistence (1-2 motorboat exhaust).	nunicipo petroleu n isodec nicipal ighway	Il and industrial solid wastes om refining industry and ane is a solvent. waste and wastewater from runoff, automobile exhaust, ils, tars, etc.
	C.	Non-Point Source: 1. Natural Constituent in paraffin fraction of petro 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from general mand will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which the second slurries of paraffin utilizing industries. Also laboratory use, has motorboat exhaust, and from general use of percentiodegradability (persistence): Low persistence (1-2 material).	nunicipo petroleu n isodec unicipal ighway oleum o onths fo	If and industrial solid wastes om refining industry and ane is a solvent. waste and wastewater from runoff, automobile exhaust, ils, tars, etc.

2. Structure:
0
CH ₃
ofg. (intermediate for alcohols, relyvinyl and nitrocellulose resins;
ethod 6).
Not formed during sewage treatme
Not formed during drinking water
stes in which compound is present.

1.	Chemic CAS N	lomenclature: 124-76-5 Сн., сн.,
3.	Class:	alcohol CH3 OH
4.		dustry Point Source (Water and Air) Manufacturers: Organic chemical industry; wood processing industry.
	2.	Users: Pine-scented odorant; raw material for synthetic mfg. of camphor; perfume mfg.
	B. Tr	Gross estimate of annual discharge: 600 tons (method 6). eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Expected to be formed in small quantities by sewage treatment/solid waste decomposition.
	2.	Drinking water treatment (e.g., chlorination): Not formed by drinking water treatment.
	•	on-Point Source: Natural <u>Major component of pine oil (1.6%); forest runoff component.</u>
	2.	Chemical reactions None identified.
	3.	Solid waste leachate Leaches from municipal waste, biological wastes (such as trees), & sludges/slurries where compound is unrecovered reactant in above industries. Man caused non-point source Use of perfumes, household soaps/detergents. Lab use.
5.	Biodeg	radability (persistence): Very difficult to degrad:: (category 4).
6.	Effecti	ve treatment method: Biological treatment; acrivated carbon.

Clo		aryl alkane (benzene derivative)			
-	_				
	rces	: ustry Point Source (Water and Air)			CH3-CH-CH3
Λ.		Manufacturers: Petroleum refining			
	2.	Users: None identified.			
		Gross estimate of annual discharge: 3 tons (me:hod	6).		
В.		atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Not treatment or degradation of solid wastes. Incir arati	on of	organic pe	troleum or co
	•	wastes and combustion of fuels will release this com			
	۷.	Drinking water treatment (e.g., chlorination): Not treatment.	produ	Jeed during	arinking wa
с.		n-Point Source: Natural Petroleum.			
	••	Transiti Terroleom.			
		Chemical reactions None identified.			
		Solid waste leachate Will leach from solid wastes as a constituent.			
		Man caused non-point source General uses of aspholaboratory use; use as a solvent, adability (persistence): Very difficult to degrace (co			general
Ric	uegi	additing (persistence). Tory difficult to degrade (cc	a regur	, -,.	
Bio					

1.	Che		al: isopropyl benzene (cumene) omenclature: 98-82-8	_ 2.	Structure:	СН3 СН—СН3
3.	Cla	s s:	aryl alkane (benzene derivative)			
4.	Sou A.	Ind	: ustry Point Source (Water and Air) Manufacturers: <u>Petroleum refining, coal tar disti</u>	llation	, organic ch	nemical industry
		2.	Users: Mfg. of acetone, alpha-methylstyrene, acatalysts; component motor fuel; mfg. diisopropyland polyester-type resins; solvent asphalt and nap	benzer	ne; catalyst	for acrylic
	В.	Tre	Gross estimate of annual discharge: 7,000 tons (satment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): or degradation of solid wastes. Incineration of and combustion of fuels will release this compound	ot proc	duced during petroleum or	sewage treatmen
		2.	Drinking water treatment (e.g., chlorination): N	ot proc	luced during	drinking water
	c.		n-Point Source: Natural Petroleum crudes, coal tar.			
		2.	Chemical reactions None identified.			
			Solid waste leachate Will leach from solid wester as a constituent. Man caused non-point source General uses of use; use as a solvent; combustion of motor fuel.			
5.	Bio	degr	radability (persistence): Difficult to degrade biolog	ically	(category 3)	•
6.	Effe	ectiv	ve treatment method: Activated carbon (90-100%	6); bio	logical treat	ment (90-100%).

	al: limonene (dipentene)	2. Structure:	CH ₃
CAS No	omenclature:		
. Class:	unsubstituted alkene		
	ustry Point Source (Water and Air) Manufacturers: Wood turpentine fractionation, materials; by-product of synthetic camphor mfg.	extraction of natural	Сн2 Сн3
2.	Users: Production monoterpenes; solvent resin refin sulfurized lube oil; rubber compounding and repaints and coatings mfg.; waxes and polishes mfg. soap dryers, etc.; dispersing agent for pigments a	claiming; dispersing ; solvent for ester g	agent in
3,	Gross estimate of annual discharge: 200 tons (ne	ethod 3).	
	atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids):	Not formed during wo	iste treatment/
2.	Drinking water treatment (e.g., chlorination): 1	Not formed by drinki	ng water
	n-Point Source: Natural Pine stumps (southwest); oil cells in rebergemot, caraway, peppermint, spearmint and c	ange skin; constituer ther oils.	nt in:lemon,
2.	Chemical reactions None identified.		
	Solid waste leachate Leaches from municipal wastudges/slurries where compound is an unrecovered Man caused non-point source General use of confurniture waxes and polishes.	d reactant in above	industries.
. Biodegr	adability (persistence): Difficult to degrade (co eq	gory 3).	
. Effective	ve treatment method: Biological treatment; as tiv	rated carbon.	

Class: alkyl ester Class: alkyl ester Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry; natural products industry. 2. Users: Intermediate in special synthesis; medical esearch; reference standard in gas chromatography. 3. Gross estimate of annual discharge: 30 tons (method 6). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Compound not expected to be producing biological decomposition of sewage/solid wastes. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking water treatment. C. Non-Point Source: 1. Natural Beechwood tar; rottenoak wood. 2. Chemical reactions None identified 3. Solid waste leachate Will leach in small quantities from decomposing biological wastes. 4. Man caused non-point source General laboral by use. Biodegradebility (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).	1. Chemical: methyl ester of lignoceric acid 2. Structure:			Structure:
Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry; natural products industry. 2. Users: Intermediate in special synthesis; medical esearch; reference standard in gas chromatography. 3. Gross estimate of annual discharge: 30 tons (method 6). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Compound not expected to be producing biological decomposition of sewage/solid wastes. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking water treatment. C. Non-Point Source: 1. Natural Beechwood tar; rottenoak wood. 2. Chemical reactions None identified 3. Solid waste leachate Will leach in small quantities from decomposing biological wastes. 4. Man caused non-point source General laboral sty use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).				CH3-(CH2)-C-0-CH3
A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry; natural products industry. 2. Users: Intermediate in special synthesis; medical research; reference standard in gas chromatography. 3. Gross estimate of annual discharge: 30 tons (method 6). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Compound not expected to be producing biological decomposition of sewage/solid wastes. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking wateratment. C. Non-Point Source: 1. Natural Beechwood tar; rottenoak wood. 2. Chemical reactions None identified 3. Solid waste leachate Will leach in small quantities from decomposing biological wastes. 4. Man caused non-point source General laboral sty use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).	_		-	
1. Manufacturers: Organic chemical industry; natural products industry. 2. Users: Intermediate in special synthesis; medical esearch; reference standard in gas chromatography. 3. Gross estimate of annual discharge: 30 tons (method 6). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Compound not expected to be produring biological decomposition of sewage/solid wastes. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking wateratment. C. Non-Point Source: 1. Natural Beechwood tar; rottenoak wood. 2. Chemical reactions None identified 3. Solid waste leachate Will leach in small quantities from decomposing biological wastes. 4. Man caused non-point source General laboratory use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).				
2. Users: Intermediate in special synthesis; medical research; reference standard in gas chromatography. 3. Gross estimate of annual discharge: 30 tons (method 6). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Compound not expected to be preduring biological decomposition of sewage/solid wastes. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking wastes. C. Non-Point Source: 1. Natural Beechwood tar; rottenoak wood. 2. Chemical reactions None identified 3. Solid waste leachate Will leach in small quantities from decomposing biological wastes. 4. Man caused non-point source General laboral ary use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).			produ	cts industry.
3. Gross estimate of annual discharge: 30 tons (method 6). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Compound not expected to be preduring biological decomposition of sewage/solid wastes. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking wateratment. C. Non-Point Source: 1. Natural Beechwood tar; rottenoak wood. 2. Chemical reactions None identified 3. Solid waste leachate Will leach in small quantities from decomposing biological wastes. 4. Man caused non-point source General laboratory use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).				
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4. Man caused non-point source General laboratory use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).	2.	Chemical reactions None identified		
4. Man caused non-point source General laboratory use. Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).	3.	Solid waste leachate Will leach in small quantities	from	decomposing biological
Biodegradability (persistence): Moderately persistent. Approx. 3-6 months to complete degrade (category 3).		wastes.		
degrade (category 3).	4.	Man caused non-point source General laboratory u	se	
Effective treatment method: Biological (90%).				
Effective freatment method: Biological (YU%).	Effecti			
	ELIGCI	ve frediment method: Biological (70%).		

		al: methane	2. Structure:
CAS	5 No	omenclature: 74-82-8	 нсн
Cla	ss:	unsubstituted alkane	
Soul	Ind	: Justry Point Source (Water and Air) Manufacturers: <u>Natural gas mfg.; coal proce</u>	essing.
	2.	Users: Mfg. carbon black, acetylene, hydroc nethanol, hydrogen cyanide, carbon tetrachlo	ge:, halogenated methanes and ethylene, prige, chloroform, fuel.
В.	Tre	Gross estimate of annual discharge: 3000 tons atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): tion of sewage and solid wastes.	
	2.	Drinking water treatment (e.g., chlorination):	: Not formed by chlorination.
С		n-Point Source: Natural Marsh gas; natural gas; coal.	
	2.	Chemical reactions Methyl radical + ethyl a	cehyde radical → methane + ethyl aldehy
		Solid waste leachate Will be present in leach wastes of which it is a constituent. Man caused non-point source Pipeline and do	
Biod	degr	radability (persistence): Difficult to degrade (co	egory 3).
Effe	ectiv	ve treatment method: <u>Biological treatment (70</u>	C-90%).

	1000	alcohol		-
	Jrces			\$
-	_	s: dustry Point Source (Water and Air)		
•		Manufacturers: Organic chemical industry; wo	od proces	sina industry .
	2	Users: Mfg. formaldehyde, methacrylates, met	hylamines	dimethyl terephthalate
	·	methyl halides, ethylene glycol; mfg. antifreez	e, polyfor	rmaldehydes; solvent;
		mfg. plastics; industrial solvent (pharmaceutical	s, polyme	ers, etc.), aviation fuel (for
		water injection); denaturant for ethanol; dehydr	ator for no	atural gas.
	^			1.1
_		Gross estimate of annual discharge: 100,000 to	ons (metho	od 1).
В.		eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): _	Formad d	والمتعدد المتعدد المتع
	1.	sewage and readily decomposes. Formed during	decompos	sition of solid higherical west
		and is readily metabolized. Formed by decompo	osition of	industrial sludges/slurries fro
		above identified users; when compound is a comp	onent of	those sludges/slurries, it is
		released to the air by surface soil spreading of s		
	2.	Drinking water treatment (e.g., chlorination):		uced during drinking water
		treatment.		
C	No	on-Point Source:		
C .		Natural Wood.		•
	_			
	2.		→ methyl	peroxide radical - methanol
	3	+ formaldehyde. Solid waste leachate Present in leachate from	L:-1:	
	٠.	sludges/slurries where it is a reactant/unreacted	product	solid waste and industrial
		Man caused non-point source Constituent of do	mestic wa	ste General use of plastics
	4.	CONTROCH OF GO	THESTIC YYU	sic. Celleral asc of pigstics
	4.	antifreeze. General laboratory use.		
Bio		antifreeze. General laboratory use.	,	
Bic		radability (persistence): Low persistence (1-2 mor	nths) (cate	gory 2). Water solubility
Bic			nths) (cate	gory 2). Water solubility
Bic		radability (persistence): Low persistence (1-2 morand its production during decomposition of other	iths) (cate items cau	gory 2). Water solubility

Chemic	al: 2-methoxy biphenyl omenclature: 86-26-0	2. Structure:
	non-halogenated ether	O-CH ₃
A. Ind	ustry Point Source (Water and Air) Manufacturers: None identified.	
2.	Users: None identified.	
B. Tre	Gross estimate of annual discharge: 1 ton or leatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): during ptl adjustment following chlorination.	May be formed from benzyl phenol
2.	Drinking water treatment (e.g., chlorination): during pH adjustment following chlorination.	May be formed from benzyl phenol
	n-Point Source: Natural None,	
3,	Chemical reactions benzyl phenol + chloromethoxybiphenyl Solid veste leachate Will leach from solid was	astes where this compound is present.
	Man caused non-point source None identifie adability (persistence): Moderately persistent	
Effectiv	ve treatment method: Activated carbon (90-1)	0%).

CAS N	Nomenclature:	
Class:	Aryl ester	
Source	s:	
A. In	dustry Point Source (Water and Air)	
1.	Manufacturers: Organic chemical industr	y; natural products industry.
2.	Users: Dye carrier in dyeing of polyester	fibers; additives for disinfectants, say
	sauce, and pesticides; perfume mfg.; solv	
	and rubber; flavoring.	
_		
	Gross estimate of annual discharge: 30	tons (method 6) •
	eatment Point Source (Water and Air)	
1.	Waste treatments/disposal (sewage and so	
	during biological decomposition of sewage	
	wastes, and industrial waste sludges and s	
	stituent will release small quantities to th	e air.
2	Drinking water treatment (e.g., chlorina	tion): Not and wood during drinking and
۷.	1. 1	
	rregrment.	
_	on-Point Source:	
1.	Natural Occurs in oils of clove, ylang	ylang, and tuberose.
9	Chamical roactions No. 11 1101	
2.	Chemical reactions None identified.	
3.	Solid waste leachate Will leach in small	augntities from decomposing biological
	wastes	
4.	Man caused non-point source Water-born	ne discharges of food and domestic sewa
	General use of dyes, disinfectants, pestic	
Biode	gradability (persistence): Biodegraded with	
	ive treatment method: Biological (90%).	

	S Nomenclature: 120-75-2 ss: benzothiazole	
	rces: Industry Point Source (Water and Air) 1. Manufacturers: None identified.	
	2. Users: None identified.	
В.	3. Gross estimate of annual discharge: 30 to	
	1. Waste treatments/disposal (sewage and so or biological degradation of solid wastes. etc., and combustion of fuels may release	Incideration of petroleum products, ta
	2. Drinking water treatment (e.g., chloring treatment.	
c.	Non-Point Source: 1. Natural Minor constituent in coal and p	etrole Jm.
	2. Chemical reactions None identified.	
	3. Solid waste leachate Will leach from sol	
Bioc	4. Man caused non-point source Fuel comb degradability (persistence): Persistent (categorial)	
-		
	ective treatment method: Activated carbon (9	10. 10.30()

Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: None identified. 2. Users: None identified. 3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).	Chemical: methyl biphenyl	2. Structure:
Class: aryl alkane (benzene derivative) Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: None identified. 2. Users: None identified. 3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	CAS Nomenclature: 643-58-3	<u>СП</u>
A. Industry Point Source (Water and Air) 1. Manufacturers: None identified. 2. Users: None identified. 3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	Class: aryl alkane (benzene derivative)	
1. Manufacturers: None identified. 2. Users: None identified. 3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	Sources:	
2. Users: None identified. 3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	A. Industry Point Source (Water and Air)	
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3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),		
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3. Gross estimate of annual discharge: 10 tons or less (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatment biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	2 House None identified	
 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4), 	Z. Osers: Trone identified.	
 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4), 		
 B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Not formed during sewage treatm or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4), 		
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or biological degradation of solid wastes. May be released during combustion of various wastes. 2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),		
2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	1. Waste treatments/disposal (sewage and solids): _ f	Not formed during sewage treatme
2. Drinking water treatment (e.g., chlorination): Not formed during drinking water treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).		e released during combustion of
C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).	various wastes.	
C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).		
C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).		
C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),		Not formed during drinking water
2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	treatment.	
2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),		
2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),		
2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4),	C Non-Point Source:	
2. Chemical reactions None identified. 3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).	•	
3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).		
3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).		
3. Solid waste leachate Will leach from wastes where compound is present. 4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).		
4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).	2. Chemical reactions None identified.	
4. Man caused non-point source Lab use. Biodegradability (persistence): Moderately persistent (category 4).	· · · · · · · · · · · · · · · · · · ·	
Biodegradability (persistence): Moderately persistent (category 4).	3. Solid waste leachare Will leach from wastes wh	ere compound is present.
Biodegradability (persistence): Moderately persistent (category 4).	4 Man caused non-point source Lab use	
	4. Wall caused holf politi source Eab use.	
	Riodegradability (persistence): Moderately persistent (cat	egory 1)
Effective treatment method: Activated carbon (90-100%).	Procedured herapiene de inordificia herapien (con	<u>~g~, , , , , , , , , , , , , , , , , , ,</u>
Effective treatment method: Activated carbon (90-100%).		
Effective treatment method: Activated carbon (90-100%).		
· markar garage in the enterest interest to the control of the con	Effective treatment method: Activated carbon (90-100)	%).

			. Сн <u></u> СН-СН _Z С-Н
Clas	ss: _	aldehyde (alkane derivative)	
-	rces:		3
Α.		ustry Point Source (Water and Air)	
	1.	Manufacturers: Organic chemical industry; petroleu	om retining industry.
	2.	Users: Flavor/perfume mfg.; pharmaceuticals: \$ \(\text{nthe} \)	atic recipe: rubber accolorators
		ridyor/pertume mrg ; pharmaceuticals s	enc resins; runner accelerators
	3.	Gross estimate of annual discharge: 30 tons (me hod	6).
В.		atment Point Source (Water and Air)	
		Waste treatments/disposal (sewage and solids): May during sewage treatment or biological degradation of	
		doring sewage nearment of brotogreat degradation of	30114 Wastes:
	2.	Drinking water treatment (e.g., chlorination): Not f	formed during drinking water
		treatment,	
<u>~</u>	. .		
C .		n-Point Source: Natural Oils in lemon, orange, peppermint, sucal	votue
	• •	Transfer Charles, Stanger, peppermitty, Jean	ypios
	2.	Chemical reactions 3-methyl butene or 3-methyl but	anol + oxidation conditions
		(HOCI) → methyl butanai.	
	J.	Solid waste leachate <u>Will leach from wastes is which</u> also leach in small quantities from biological wastes.	ch this compound is present; ma
		Man caused non-point source Evaporation free perfu	me, lab use.
٥.			
Bioc	degr	adability (persistence): Low biodegradability (-2 mo	onths for degradation) (category

		non-cyclic halogenated alkane	H-C-C1
			H
	rces Lnd	s: dustry Point Source (Water and Air)	
•		Manufacturers: Organic chemical industry.	
		organia onemical maosily.	
	2	Users: Mfg silicopes totroothyl load and all I	1 .1 1 11
	۷.	Users: Mfg. silicones, tetraethyl lead, synthetic rubber refrigerant mfg.; mfg. of organic chemicals (methylene c	and methyl cellulose;
		etc.); mfg. fumigants; low temperature solvent; catalyst	carrier in polymerization
		medicine; fluid for thermometric or thermostatic equipme	nt: methylatina agent:
		extractant; propellant; herbicide.	
		Gross estimate of annual discharge: 5,000 tons (method	2).
В.		eatment Point Source (Water and Air)	
	Ι.	Waste treatments/disposal (sewage and solids): Formed defiluent prior to discharge. Not formed by biological de	
		solid wastes, or by incineration. Released to air by ineff	
		recirculation.	inciciii sorveiii recovery/
	2.	Drinking water treatment (e.g., chlorination): Formed d	uring chlorination proce
_	No	on-Point Source:	
٠.		Natural None.	
	^		
	2.	Chemical reactions (Air) methyl radical + chlorine → Methy	
		(Water) carbonyl or hydroxyl organics + HQCl→ methyl chl. Solid waste leachate Will leach from municipal or indu	oride + water.
	ર	It is the second of the second	sittat wastes iti
•	3.	which this compound is present.	
•		which this compound is present. Man caused non-point source General use of eaded fue	els medicines herbicid
•		Man caused non-point source General use of eaded fue	els, medicines, herbicid
Bio	4.	Man caused non-point source General use of eaded fue use as a laboratory chemical. General use of chlorinate	d water.
Bio	4.	Man caused non-point source General use of eaded fue	d water.

~ 1		ketone (alkane derivative) CH3 CH2 C-CH3
		Reforme (directive)
	ces	s: dustry Point Source (Water and Air)
•		Manufacturers: Organic chemical industry.
	- •	Organic Chamber Theodi'y.
	2	Home Calcart on a Him and for an inches
	۷.	Users: Solvent or swelling agent for resins; intermediate in mfg. of ketones and amines; flush-off paint stripper; extraction and production of wax from lube oil frac
		of petroleum; solvent in nitrocellulose coatings and vinyl films; cements and adhesis
		smokeless powder mfg.; cleaning fluids; printing (catalyst & carrier).
		Gross estimate of annual discharge: 8,000 tons (method 1).
В.		eatment Point Source (Water and Air)
	1.	Waste treatments/disposal (sewage and solids): During biological treatment of complex organics, MEK is a minor intermediate which is quickly degraded in efficient
		systems. Surface spreading of studges and sturness containing MEK releases quantiti
		to the air.
	2.	Drinking water treatment (e.g., chlorination): Not formed during drinking water
		purification.
-	No	on-Point Source:
		Natural None
	~	
	Z.	Chemical reactions 1-butene or 2-butanol + exidation condition (HOCI) - methy ketone.
•	3.	Solid waste leachate Present in landfill sludges where used as process solvent or
		unrecovered reactant. Can be degraded during soil migration.
	4.	Man caused non-point source General use as solvent (> 80% loss to water and
		ai), evaporation from applied paints and coatings, cements, adhesives, cleaning flu
Biod	legr	radability (persistence): Low persistence (approx mately 2 months for complete
		degradation) (category 1).

CA			— H ₃ C-Сн ₂
Clo	as s: _	heterocyclic amine	CH,
	urces		•
Α.		lustry Point Source (Water and Air)	
	1.	Manufacturers: Organic chemical industry	
	^		
	2.	Users: Mfg. nicotinic acid and nicotinamide; mfg.	of vinyl pyridines for copolyme
		intermediate for germicides and textile finishes; consolvents.	rosion innibitor for chloringled
	_		
_		Gross estimate of annual discharge: 30 tons (method	od 6).
В.		eatment Point Source (Water and Air)	na identified
	١,	Waste treatments/disposal (sewage and solids): No	ne idenimed.
	2.	Drinking water treatment (e.g., chlorination): No	t formed during drinking water
	2.	Drinking water treatment (e.g., chlorination): No treatment.	t formed during drinking water
	2.		t formed during drinking water
	2.		t formed during drinking water
с.	No	on-Point Source:	t formed during drinking water
с.	No	treatment.	t formed during drinking water
с.	No	on-Point Source:	t formed during drinking water
с.	No 1.	on-Point Source: Natural None.	t formed during drinking water
c.	No 1.	on-Point Source:	t formed during drinking water
с.	No 1.	on-Point Source: Natural None. Chemical reactions None identified.	
с.	No 1.	on-Point Source: Natural None. Chemical reactions None identified.	
с.	No 1. 2.	Chemical reactions None identified. Solid waste leachate Will leach from wastes in whether the state of the	nich this compound is present.
с.	No 1. 2.	on-Point Source: Natural None. Chemical reactions None identified.	nich this compound is present.
	No 1. 2. 3.	Chemical reactions None identified. Solid waste leachate Will leach from wastes in whether the state of the	nich this compound is present.
	No 1. 2. 3.	Chemical reactions None identified. Solid waste leachate Will leach from wastes in whether the waste in the waste of the	nich this compound is present.
	No 1. 2. 3.	Chemical reactions None identified. Solid waste leachate Will leach from wastes in whether the waste in the waste of the	nich this compound is present.

CA	emico S No	omenclature: 2177-47-1	CH ₃
Cla	ss: _	aryl alkane (benzene derivative)	
		ustry Point Source (Water and Air) Manufactuters: Petroleum refining industry.	
	2.	Users: Minor ingredient in lower grade indenenaphtha constituent.	and its subsequent uses; asphalt and
В.	Tre	Gross estimate of annual discharge: atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): or degradation of solid wastes. Incineration of combustion of fuels will release this compound	organic petroleum or coal wastes an
	2.	Drinking water treatment (e.g., chlorination): treatment.	Not produced during drinking water
с.		n-Point Source. Natural Petroleum,	
	2.	Chemical reactions None identified.	
		Solid waste leachate Will leach from solid was a constituent.	
		Mun caused non-point source General uses of a laboratory use; use as a solvent.	
Bio	degr	adability (persistence): Very difficult to degrac <u>a</u>	(category 4).
-			

Chemic	al: methyl naphtha	lene	2. Structure:
CAS No	omenclature: 91–57–6		
Class:	aryl alkane (benzer	ne derivative)	CH ₃
Sources	······································		•
	ustry Point Source (Wate		
1.	Manufacturers: Petrol	leum refining; coal processing.	
2.	Users: Insecticide mfg asphalt and naphtha co		olvent organic synthesis;
3.	Gross estimate of annua	al discharge: 600 tons (met)	nod 3).
B. Tree	atment <mark>Poi</mark> nt Source (W	ater and Air)	
1.			produced during sewage treatm
	and combustion of fuel	waste. Incineration of organs s will release this compound to	ic petroleum or coal wastes o the air.
2.		ent (e.g., chlorination): <u>Not</u>	produced during drinking
	n-Point Source: Natural Coal, p	petroleum.	
•			
2.	Chemical reactions	None identified.	
3.	Solid waste leachate _ as a constituent.	Will leach from solid westes i	n which compound is present
4.	Man caused non-point	source General uses of 1spha	It and naphtha; general labora
Biodegr		Difficult to degrade bic ogica	lly (category 3).

Chemic	cal: methyl palmitate	2. Structure:
	omenclature:	O
Class: d	alkyl ester	$\frac{-}{C} = \frac{0}{(CH_2)_{4}} = \frac{0}{(CH_2)_{4}} = \frac{0}{(CH_2)_{4}} = \frac{0}{(CH_3)_{4}} = \frac$
Sources		
A. Inc	dustry Point Source (Water and Air)	
1.	Manufacturers: Organic chemical industry.	
2.	Users: Intermediate in detergents, emulsifiers, 🧓	
	lubricants, plasticizers. Constituent in anima	feed; used in medical research.
3.	Gross estimate of annual discharge: 30 tons (tax	thod 6).
	eatment Point Source (Water and Air)	
7.	Waste treatments/disposal (sewage and solids):	
	treatment/solid waste disposal. Released to air	
	refuse, general industrial rubbish, and waste slaproduction and other manufacturing processes ab	
	production that other manoracrossing processes as	
2.	Drinking water treatment (e.g., chlorination):	Not formed during drinking water
	treatment.	
C. No	on-Point Source:	
1.	Natural None.	
2.	Chemical reactions None identified.	
3.	Solid waste leachate Leaches from municipal on	d industrial wastes containing
	plastics.	
4.	Man caused non-point source General use of p	
	(leaches from tubings, dishes, paper, containes,	
	bodies contain minor amounts of methyl palmin re	
Biodec	gradability (persistence): Moderately persistant in	
	lete degradation) (category 3).	go and some (2 10 monnis 10)
	ve treatment method: Activated carbon (90-10: 9	6); incineration (greater than 99%),

Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry. 2. Users: Perfume and flavoring mfg.; dye mfg.; laboratory reagent. 3. Gross estimate of annual discharge: 20 tons (method 3). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Formed during biological decomposition of solid biological wastes readily metabolized. Formed by decomposition of industrial sludges/slurries, firm above identified users. When compound is a component of those sludges/slurries, it is released to the air by surface soil spreading of these sludges/slurries. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking water treatment. C. Non-Point Source: 1. Natural No information. 2. Chemical reactions Hydroxylation of vinyl benzene. 3. Solid waste leachare Present in leachate from siological solid waste (minox) and industrial sludges/slurries where it is a reactant/unreacted product, and from solid wastes. 4. Man caused non-point source General use of perfumes, flavors, dyes; general laboratory use. Biodegradability (persistence): Difficult to degrade bio-sgically (category 3).		155.	alcohol	-		CH3-CH2-OH	
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sewage and readily decomposes. Formed during decomposition of solid biological wastes readily metabolized. Formed by decomposition of industrial sludges/slurries, firom above identified users. When compound is a component of those sludges/slurries, it is released to the air by surface soil spreading of these sludges/slurries. 2. Drinking water treatment (e.g., chlorination): Not produced during drinking water treatment. C. Non-Point Source: 1. Natural No information. 2. Chemical reactions Hydroxylation of vinyl berzene. 3. Solid waste leachate Present in leachate from biological solid waste (minor) and industrial sludges/slurries where it is a reactant/unreacted product, and from solid wastes 4. Man caused non-point source General use of perfumes, flavors, dyes; general laboratory use.	В.	Tre	atment Point Source (Water and Air)				
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	c.	No. 1.	Drinking water treatment (e.g., chlorination): Not treatment. on-Point Source: Natural No information. Chemical reactions Hydroxylation of vinyl berizene	produced			₹tes
Biodegradability (persistence): Difficult to degrade biologically (category 3).	c.	No. 1. 2.	Drinking water treatment (e.g., chlorination): Not treatment. on-Point Source: Natural No information. Chemical reactions Hydroxylation of vinyl benzene Solid waste leachate Present in leachate from piolo industrial sludges/slurries where it is a reactant/unreaction.	produced			stes
	c.	No. 1. 2.	Drinking water treatment (e.g., chlorination): Not treatment. on-Point Source: Natural No information. Chemical reactions Hydroxylation of vinyl benzene Solid waste leachate Present in leachate from biologindustrial sludges/slurries where it is a reactant, unreactant caused non-point source	egical soli	id waste		stes
		No. 1. 2. 3.	Drinking water treatment (e.g., chlorination): Not treatment. on-Point Source: Natural No information. Chemical reactions Hydroxylation of vinyl benzene Solid waste leachate Present in leachate from piolo industrial sludges/slurries where it is a reactant/ unreaction where it is a reactant for the control of the contr	egical soli acted pro	id waste	(minor) and nd from solid was above user	stes s .
		No. 1. 2. 3.	Drinking water treatment (e.g., chlorination): Not treatment. on-Point Source: Natural No information. Chemical reactions Hydroxylation of vinyl benzene Solid waste leachate Present in leachate from piolo industrial sludges/slurries where it is a reactant/ unreaction where it is a reactant for the control of the contr	egical soli acted pro	id waste	(minor) and nd from solid was above user	stes s.
Effective treatment method: Biological treatment (95-100%); activated carbon (90-100%).	Bio	2. 3. 4.	Drinking water treatment (e.g., chlorination): Not treatment. on-Point Source: Natural No information. Chemical reactions Hydroxylation of vinyl benzene Solid waste leachate Present in leachate from piologinal industrial sludges/slurries where it is a reactant/unreactant unreactant use of perfumes, flavors, dyes; general laboradability (persistence): Difficult to degrade biological	egical soli acted pro ratory use	id waste duct, a gory 3).	(minor) and nd from solid was above user	stes rs .

Cla		aldehyde (alkane derivative)	- Сн ₃ 0 - Сн ₃ -Сн-С-Н
Sou	rces Ind	: Justry Point Source (Water and Air)	
	1.	Manufacturers: Organic chemical industry	
	2.	Users: Solvent (artificial leather mfg. coated paper drug and perfume mfg. industries); mfg. of brake fl mfg. resins and rubber chemicals; mfg. organic che	uid, butyl esters, plasticizers
В.	Tre	Gross estimate of annual discharge: 600 tons (mether than 1995) 600 tons (mether than	med in small quantities during
	2,	Drinking water treatment (e.g., chlorination): For drinking water treatment.	med in small quantities during
Ξ,	No 1.	n-Point Source: Natural None identified.	
	3.	Chemical reactions Isobutylene or isobutanol air 2-methyl propanol. Solid waste leachate Will leach from biological wastel quantities) and from appropriate industria slumman caused non-point source Use as a solven; general	rastes, municipal wastes (in
310	degr	chemical. radability (persistence): <u>Biodegradable (catego / 2)</u>	

Che	emic	al: <u>methyl stearate</u> omenclature: 112–61–8	2. Structure:
			— 0 Сн3-(СН2), С-0-СН
	_	alkyl ester	$ CH_3-(CH_2)_{16}$
		ustry Point Source (Water and Air) Manufacturers: Organic chemical industry; natur	al products industry.
	2.	Users: Lubricants, polishes, creams (lipstick, rous acid detergents, emulsifiers, wetting agents, stablextiles; biochemical and medical research.	
В.		Gross estimate of annual discharge: 70 tons (met	nod 6).
	١.	Waste treatments/disposal (sewage and solids): Network during biological treatment of sewage or biological released to air during incineration of municipal waste sludges and slurries from uses described	<u>al degradation of sewage sludge</u> <u>aste, general industrial rubbish</u>
	2.	Drinking water treatment (e.g., chlorination): N treatment.	ot formed during drinking water
с.		on-Point Source: Natural <u>None</u>	
	2.	Chemical reactions None identified.	
		Solid waste leachate Leaches from municipal and plastics, detergents, emulsifiers and lubricants Man caused non-point source General use of plastics and lubricants	stics (leaches from tubings, dish
Bio	degr	paper, containers, etc.) cosmitics, polishes, ubradability (persistence): Difficuit to biodegrade ca	
		1	

	·		- H—Ç—C1
		non-cyclic halogenated alkane	- <u>'</u>
		: ustry Point Source (Water and Air) Manufacturers: None identified.	
В.	3. Tre	Users: Paint stripping and solvent degreasing; m.j. as mfg. of synthetic fibers; extraction of naturally-occurrefrigerant in low-pressure refrig. and air-conditione and leather coatings; pharmaceutical; used in plastic dewaxing; organic synthesis; blowing agent in forms. Gross estimate of annual discharge: 10,000 tons (matment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): possible chlorination of sewage effluent prior to discharge.	rring heat sensitive substances; rs; fumigant; solvent; textile s processing; spotting agent; nethod 2).
	2.	Drinking water treatment (e.g., chlorination): Res	suits from chlorination.
С.		ni-Point Source: Natural None	
Bio	3. 4.	Chemical reactions (Air) methyl radical + chlori e rathonyl or methyl hydroxyl organics + HOCl - methy Solid waste leachate Will occur in industrial and mu component of the disposed items. Man caused non-point source Use of paint ippersonable ticals and point to describe the description of the disposed items.	lene chloride + water unicipal landfill where it is a s and degreasing compounds; lab ; foams that employ it as blowing
	odegr 		; foams that employ it as blow

<u></u>		unsubstituted aromatic	
-			
		: ustry Point Source (Water and Air) Manufacturers: Petroleum refining; coal tar o	distillation •
	2.	Users: Moth ball mfg.; mfg. a and b naphthological detergents and wetting agents mfg.; mfg. phthological culture of the celluloids, lampblack, smokeless powder; solve cutting fluid, synthetic tanning, preservative,	alic anhydride; mfg. synthetic resins
	3.	naphtha constituent. Gross estimate of annual discharge: 6,000 tor	·
В.	Tre	atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): or degradation of solid waste. Incineration of combustion of fuels will release this compound	Not produced during sewage treats
	2.	Drinking water treatment (e.g., chlorination): treatment.	Not produced during drinking water
с.	_	n-Point Source: Natural Petroleum, coal tar.	
	2.	Chemical reactions None identified.	
	3.	Solid waste leachate Will leach from solid was	estes in which compound is present
		as a constituent. Man caused non-point source General uses of use; use as a solvent; evaporation from moth bautilization of lubricants and motor fuels, use adability (persistence): Difficult to degrade bio	is, use as a fungicide, combustion of cutting fuels.

0-снз
synthesis; mfg. of pharmaceutical
None identified
Not formed during drinking water
stes in which this compound is prese
ory chemical.
e (category 4),

	Nomenclature: 98-95-3	
Class:	nitro compound (benzene derivative)	annual state of the state of th
Source		
	Advantage (Water and Air)	
١.	. Manufacturers: Organic chemical industry.	
2.	. Users: Mfg. aniline and dyestuffs; solvent re	covery plants: mfa. rubber chemi
	drugs, photographic chemicals; refining lubric	
	solvent for cellulose others; cellulose acetate	
	and shoe polish formulations.	
3.	. Gross estimate of annual discharge: 10,000 t	ons (method 2).
	reatment Point Source (Water and Air)	
	. Waste treatments/disposal (sewage and solids):	No information.
2.	Drinking water treatment (e.g., chlorination)	Not formed during drinking wa
2.	Drinking water treatment (e.g., chlorination).	Not formed during drinking wa
2.		Not formed during drinking wa
2.		Not formed during drinking wa
		Not formed during drinking wa
C. N	treatment.	Not formed during drinking wa
C. N	Von-Point Source:	Not formed during drinking wa
C. N	Von-Point Source:	Not formed during drinking wa
C. N 1.	Von-Point Source:	Not formed during drinking wa
C. N 1.	In treatment. Non-Point Source: Natural None. Chemical reactions None identified.	
C. N 1.	In the street with the street	
C. N 1. 2.	Non-Point Source: Natural None Chemical reactions None identified. Solid waste leachate Will leach from wastes	in which compound is present.
C. N 1. 2. 3. 4.	In treatment. Non-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Will leach from wastes Man caused non-point source Use of shoe pouse as a laboratory chemical.	in which compound is present.
C. N 1. 2. 3. 4.	In the source: Non-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Will leach from wastes Man caused non-point source Use of shoe points.	in which compound is present.
C. N 1. 2. 3. 4.	In treatment. Non-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Will leach from wastes Man caused non-point source Use of shoe pouse as a laboratory chemical.	in which compound is present.
C. N 1. 2. 3. 4.	In treatment. Non-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Will leach from wastes Man caused non-point source Use of shoe pouse as a laboratory chemical.	in which compound is present.
2. 3. 4. Biodeg	In treatment. Non-Point Source: Natural None. Chemical reactions None identified. Solid waste leachate Will leach from wastes Man caused non-point source Use of shoe pouse as a laboratory chemical.	in which compound is present.

1.	Chemical: nonane	2. Structure:
	CAS Nomenclature:	$CH_{3}-(CH_{2})_{7}-CH_{3}$
3.	Class: unsubstituted alkane	
4.	Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Petroleum refinery.	
	2. Users: Organic synthesis; solvent; standardized by paraffin products; rubber industry; paper processing distillation chaser. Constituent in waterborne west	industry; biodegradable detergents,
	3. Gross estimate of annual discharge: 300 tons (me) B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids): Nor decomposition of solid wastes. Incineration of mand slurries containing petroleum constituents recommonded.	lot formed during sewage treatment unicipal waste and industrial sludges
	2. Drinking water treatment (e.g., chlorination): N	
	C. Non-Point Source: 1. Natural Constituent in paraffin fraction of perro	leum.
	2. Chemical reactions None identified.	
	3. Solid waste leachate Will leach from genero mand will leach from solid sludges and slurries of paraffin utilizing industries, and wastes in which was a component in murgeneral use of paraffins. Also laboratory use him motorboat exhaust, and from general use of patro	nonane is a solvent. nicipal waste and wastewater from ghway runoff, automobile exhaust,
!	5. Biodegradability (persistence): Low persistence (1-2 m (category 3)	
ć		95%); activated carbon (90-100%);

Chemical: octadecane	2. Structure:
CAS Nomenclature: 593-45-3	CH3-(CH2),-CH3
Class: unsubstituted alkane	3 . 2 16
Sources:	
A. Industry Point Source (Water and Air)	
1. Manufacturers: Petroleum refining.	
2 11	
	lardized hydrocarbon; jet fuel research; mfg. er processing industry; calibration. Constitue
	facture.
3. Gross estimate of annual discharge: 30	(N tans (mathed 3)
B. Treatment Point Source (Water and Air)	o ions (memod o).
	solids): Not formed during sewage treatment
	nceration of municipal waste and industrial
	um constituents releases this compound to the
air.	
 Drinking water treatment (e.g., chloring purification. 	nation): Not formed during drinking water
C. Non-Point Source: 1. Natural Constituent in paraffin fracti	ion of pe∘roleum.
2. Chemical reactions None identified.	
3. Solid waste leachate Will leach from	n general municipal and industrial solid wast
and will leach from solid sludges and s	slurries of petroleum refining industry and
paraffin utilizing industries, and waste	
4. Man caused non-point source Compo	nent in nunicipal waste and wastewater from
general use of paraffins. Also laborat	ory use, highway runoff, automobile exhaus
motorboat exhaust, and from general u Biodegradability (persistence): Low persiste	ence (1-2 months for complete degradation)
(category 2)	
	atment (č0–95%); activated carbon (90–100%
incineration (>99%).	

Chemical: octane	2. Structure:
CAS Nomenclature: 111-65-9	$CH_3-(CH_2)_L-CH_3$
Class: unsubstituted alkane	3
Sources:	age company to the second contract and the company of the contract and the
A. Industry Point Source (Water and Air)	
1. Manufacturers: <u>Petroleum refining.</u>	
2. Users: Solvent recovery plants: organi	c synthes;; solvent; standardized hydrocarbon
	ts; rubber industry; paper processing industry;
	Constituent in waterborne waste of polyolefin
manufacture.	
3. Gross estimate of annual discharge: 3	00 tons (rethod 4)
B. Treatment Point Source (Water and Air)	oo lolis (; emod +/;
	solids): Not formed during sewage treatmen
	nceratic of municipal waste and industrial
	um constituents releases this compound to the
air.	
Kanda at a second and a second	
	nation): Not formed during drinking water
purification.	
C. Non-Point Source:	
1. Natural Constituent in paraffin fract	ion of petroleum.
2. Chemical reactions None identified.	
3. Solid waste leachate Will leach from	n general municipal and industrial solid waste
	slurries of petroleum refining industry and
paraffir utilizing industries, and was	es in we ch octane is a solvent.
4. Man caused non-point source Compo	onent in municipal waste and wastewater from
	tory use highway runoof, automobile exhaus
motorboai exhaust, and from general	
. Biodegradability (persistence): Low persist	ence (1: 2 months for complete degradation)
(category 3)	100 059/\
. Effective treatment method: Biological tre incineration (>99%).	atment (30–95%); activated carbon (90–100%
Incline to the control of the contro	

CAS	Nomenclo	iture:			
 C lass	s: non-c	yclic halogena	ted alkane		$CH_3-(CH_2)_7-CI$
Source A. I	ces: Industry Pa	oint Source (Wo	ater and Air)	lustry.	
2	2. Users:	Chemical into	er mediate ; mfg. o	forganic metallics	compounds.
B. 7	Treatment 1. Waste	Point Source (\ treatments/disp	Water and Air) posal (sewage and	solids): d during biological	decomposition of sewage
2	2. Drinkir	ng water treatm	nent (e.g., chlori	nation): <u>Formed du</u>	ring chloringtion process.
	Non-Point 1. Nature				
	octene 3. Solid v present	+ HOCl → waste leachate	octyl chloride Will leach from	+ water. industric wastes in	loride + chlorine radical; (which this compound is eneral use of chlorinated
Biode		ty (persistence)	: Low persistence	(2-6 months) (categ	pory 3).

Chem	nical: pentachlorobiphenyl	2. Structure:
CAS	Nomenclature:	
Class	: halogenated biphenyl (benzene derivative)	$\frac{C_{l_2}}{C_{l_3}}$
Sourc	es:	
	ndustry Point Source (Water and Air) . Manufacturers: Organic chemical industry.	
2	2. Users:Mfg. electrical insulation; fire resistant high temperature lubricants; elastomers; adhesive pigments, and waxes; heat sensitive paper.	
	3. Gross estimate of annual discharge: 500 tons (nethod 6).
	reatment Point Source (Water and Air) . Waste treatments/disposal (servage and solids): during chlorination of sewage containing biphs decomposition of sewage or municipal wastes. industrial wastes releases PCBs.	yl. Not formed during biological
	2. Drinking water treatment (e.g., chlorination): quantities during chlorination of drinking water.	Potentially formed in small
_	Non-Point Source: Natural None	
:	2. Chemical reactions <u>Biphenyl + HOCl → FC</u>	В
,	3. Solid waste leachate <u>Compound leaches from m</u>	
A	Man caused non-point source General use of Coarings, adhesives, paper, electrical insulation	n, etc. Lab use.
3iode	egradability (persistence): Persistent (>18 months) (a	category 5).
K 7*-		

			- CI CI
	_	phenol	
	rces	s: Justry Point Source (Water and Air)	
Α.		Manufacturers: Organic chemical industry; pestic	
	•	- Organic chemical massily, pesic	de mig. matstry.
	2.	Users: Mfg. insecticides, algicides, herbicides a wood and wood products; mfg. of sodium pentachion	
		Gross estimate of annual discharge: Less than I tor	n (method 5).
В.		eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): No	t formed during biological treatme
	•	of sewage or by decomposition of sewage sludge	
		Will be released during inci	neration of wastes of which compo
		is a constituent (both municipal, industrial and sew	age sludge).
		والمراق والمنظور المراق والمنظور والمراق والمر	
	2.	Drinking water treatment (e.g., chlorination): Gen	erally not formed during chlorine
	2.	Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exic	erally not formed during chlorine ation and ring cleavage pre-
	2.	Drinking water treatment (e.g., chlorination): Gen	erally not formed during chlorine ation and ring cleavage pre-
c.		Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exic	erally not formed during chlorine ation and ring cleavage pre-
c.		Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exication after formation of 2, 4, 6-trichlorophenol	erally not formed during chlorine ation and ring cleavage pre-
c.	No 1.	Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exic dominate after formation of 2, 4, 6-trichlorophenol on-Point Source:	erally not formed during chlorine ation and ring cleavage pre-
c.	No 1.	Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exic dominate after formation of 2, 4, 6-trichlorophenol on-Point Source: Natural None	erally not formed during chlorine lation and ring cleavage pre-
c.	No. 1. 2. 3.	Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exic dominate after formation of 2, 4, 6-trichlorophenol on-Point Source: Natural None Chemical reactions None identified.	erally not formed during chlorine lation and ring cleavage pre-
C.	No. 1. 2. 3. 4.	Drinking water treatment (e.g., chlorination): Gendisinfection, instead of complete chlorination, exic dominate after formation of 2, 4, 6-trichlorophenol on-Point Source: Natural None Chemical reactions None identified. Solid waste leachate Will leach from wastes in whether the state of	erally not formed during chlorine lation and ring cleavage pre ich it is a constituent. general use of treated wood. Lab u

Che	emico S N o	al: <u>pentadecane</u> omenclat ur e: 109-66-0	$ \begin{array}{cccc} & 2. & \text{Structure:} \\ & & & & & \\ & & & & & \\ & & & & & \\ & & & & $
Cla	SS: 11	unsubstituted alkane	- 0 3 (273 3
	_		
	rces:	: ustry Point Source (Water and Air)	
Α.			
	١.	Manufacturers: Petroleum refining.	
	2.	Users: Mfg. paraffin products; rubber mfg; paper pr	rocessing industry. Constituent
	^		
_	٥. -	Gross estimate of annual discharge: 600 tons (mat)	hod 3),
В.		eatment Point Source (Water and Air)	
	١.	Waste treatments/disposal (sewage and solids): 16	
		or decomposition of solid wastes. Incineration of	municipal waste and industrial
		sludges and slurries containing petroleum constitue	hrs releases this compound to the
		air.	
	2	Drinking water treatment (e.g., chlorination): No	at formed during drinking water
		purification.	
		DOTTILIZATION.	
C.		on-Point Sources	
	1.	Natural <u>Constituents in paraffin fraction of extra</u>	oleum.
		Managerials and responsibility accordance accordance for the contract the foresteening accordance of the contract of the contr	
	9	Chemical reactions None identified.	
	£., (,	Chemical reactions None Identified.	
	3.	Solid waste leachate Will leach from genera mu	inicipal and industrial solid waste
	•	and will leach from solid sludges and slurries of pe	etroleum refining industry and
		paraffin utilizing industries, and wastes in which	pentadecane is a solvent
	4.	Man caused non-point source Component in nun	icipal waste and wastewater from
		general use of paraffins. Also laboratory use, hig	hway runoff, automobile exhaust
		mororboat exhaust, and from general use of perrol	eum oils, tars, etc.
. B	iode	gradability (persistence): Low persistence (1-2 non	
	(cate	egory 2).	tor complete degladation)
_			75%); activated carbon (90–100%)
		peration ($>99\%$).	570), uctivated carbon (90-100%)
-			

			$CH_3-(CH_2)-CH_3$
Cla	iss: <u>t</u>	unsubstituted alkane	
Sou	rces	;:	
Α.	Ind	lustry Point Source (Water and Air)	
	1.	Manufacturers: Petroleum refining; natural gas rec	covery.
		•	
	2.	Users: Specialty chemical mfg; solvent recovery a ing plants; blowing agent for plastic foams; produ- Fuel production, artificial ice mfg.; low tempera	ction of olefin, hydrogen, ammon
	2		
		Gross estimate of annual discharge: 300 tons (m	ethod 4).
В.		eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): 13	at formed during soungs treatmen
	٠.	or decomposition of solid wastes. Incineration of	or formed during sewage freatmen
		and slurries containing petroleum constituents rel	
		small quantities of pentane may be released to the	
		operations (e.g., flares, etc.) due to the volatil	
	2.	Drinking water treatment (e.g., chlorination): N	lot formed during drinking water
		purification.	
c.		on-Point Source:	
	1.	Natural Constituent in paraffin fraction of petro	leum.
	2.	Chemical reactions None identified	
•	3.	Solid waste leachate <u>Will leach in very small auc</u> solid wastes/sludges/slurries.	antities from municipal/industrial
•			
•	4.	Man caused non-point source Leakage of not iro	ıl gas-carrying pipelines; leakage
•	4.	to domestic use. Component in municipal war e	where pentane is a constituent of
•	4.	to domestic use. Component in municipal were edomestic products; combustion of petroleum/natur	where pentane is a constituent of
•		to domestic use. Component in municipal were adomestic products; combustion of petroleum/natural quantities of pentane to the air. Lab use.	where pentane is a constituent of ral gas fuels will release very sma
	iode	to domestic use. Component in municipal were edomestic products; combustion of petroleum/natur	where pentane is a constituent of ral gas fuels will release very sma

	• • •	omenclature:	$CH_3-(CH_2)_J-OH$
Cla	ss:	alcohol	3 4
Sou	rces	S:	
Α.		dustry Point Source (Water and Air)	
	1.	Manufacturers: Petroleum industry.	
	2.	Users: Solvent; mfg. of petroleum additives; crea-fo	ormaldehyde plastics
		processing; organic chemicals mfg.; raw materic: for	pharmaceutical preparations.
	3.	Gross estimate of annual discharge: 10,000 tone (met	hod 7).
В.	Tre	eatment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids): Forme	d during biological decompositi
		of sewage and readily decomposes. Formed during de	composition of solid biological
		wastes and is readily metabolized. Formed by ecom slurries from above identified users. When compound	position of industrial sludges/
		sturries, it is released to the air by surface soil pread	
	2.	Drinking water tractment /a blaningtion)	
		Not produced during drinking water treatment.	
_	N 1.	on-Point Source:	
.		Natural None identified.	
	••	I NOT LIFE OF	
	2.	Chemical reactions Pentyl radical + oxygen Per	ntyl peroxide radical,
	3	pentyl percxide radical + hydroxyl radical → pentanol Solid waste leachate Present in leachate from piologi	cal solid waste and industrial
	٥.	sludges/slurries where it is present and from so. d wast	es of above users.
	4.	Man caused non-point source General use of Fnarmac	euticals, petroleum, and
		certain plastics, general laboratory use.	
Bio	degr	radability (persistence): Readily degraded (1-2 reeks)	(category 1).

CAS Nomenclature: 93-99-2	2. Structure:
7,3-77-Z	
Class: aryl ester	
Sources:	The state of the s
A. Industry Point Source (Water and Air)	
1. Manufacturers: Organic chemical industry.	
2. Users: Plasticizer mfg; plastics mfg and proce	ssing; mfg. perfume, insecticides,
antiseptics.	
3. Gross estimate of annual discharge: 30 tons	(method 6).
B. Treatment Point Source (Water and Air)	
1. Waste treatments/disposal (sewage and solids)): Compound not formed during sew
treatment/solid waste disposal. Released to c	
refuse, general industrial rubbish, and waste	
duction and other manufacturing processes at	oove.
duction and other manufacturing processes ab	
2. Drinking water treatment (e.g., chlorination	
2. Drinking water treatment (e.g., chlorination	
2. Drinking water treatment (e.g., chlorination	
Drinking water treatment (e.g., chlorination treatment.	
Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source:	
Drinking water treatment (e.g., chlorination treatment.	
Drinking water treatment (e.g., chlorination treatment. Non-Point Source:	
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None.	
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified.	i): Not formed during drinking water
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None.	i): Not formed during drinking water
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Leaches from municipa plastics.	Not formed during drinking water
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Leaches from municipa plastics. 4. Man caused non-point source General use of	Not formed during drinking water I and industrial wastes containing f astics and above listed products.
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Leaches from municipal plastics. 4. Man caused non-point source General use of (leaches from tubings, dishes, paper, contains)	Not formed during drinking water I and industrial wastes containing F astics and above listed products. The s, etc.) Lab use, microcontamin
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Leaches from municipa plastics. 4. Man caused non-point source General use of	Not formed during drinking water I and industrial wastes containing F astics and above listed products. The s, etc.) Lab use, microcontamin
2. Drinking water treatment (e.g., chlorination treatment. C. Non-Point Source: 1. Natural None. 2. Chemical reactions None identified. 3. Solid waste leachate Leaches from municipal plastics. 4. Man caused non-point source General use of (leaches from tubings, dishes, paper, contain	Not formed during drinking water all and industrial wastes containing f astics and above listed products. The s, etc.) Lab use, microcontaminal use of perfumes, insecticides,

CAS	CAS Nomenclature: 85-44-9		0
Clas	ss: _c	ıryl ester	
Soul	rces: Ind	•	tralene.
	2.	Users: Plasticizer mfg; specialty chemical mfg; synthetic fibers; mfg. of dyes, pigments, phaproducts.	
В.	Tre	Gross estimate of annual discharge: 5,000 tor atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): treatment/solid waste disposal. Released to a refuse, general industrial rubbish, and water duction and other manufacturing processes ab	Compound not formed during sewage during incineration of municipal dudges and slurries from plastic pro-
	2.	Drinking warer treatment (e.g., chlorination) treatment.	
С.	No.	n-Point Source: Natural <u>None.</u>	
		Chemical reactions None identified.	
		Man caused non-point source <u>General use of</u>	astics and above listed products.
5100	degr	adability (persistence): <u>Difficult to degrade (co</u>	egory 3). in lab chemicals, f
ECC.		re treatment method: <u>Activated carbon (90–100</u> °	2004)

	12 No	omenclature:	CH3-CH2-CH-CH
Clo	ass:	alcohol	3 ~ 2
Sou	urces		unerental Printer Control of the Con
Α.	Ind	ustry Point Source (Water and Air)	
	1.	Manufacturers: Plants oxidizing propane and	d fusel oil.
	0		
	۷.	Users: Solvent in mfg. printing inks, nail po	plishes, polymerization and spinning of
		acrylonitrile, dyeing of wool, cellulose acet	ate tilm, PVC adhesives; metal degreaser
		mfg. floor wax, cleaning preparations, solver vegetable oils; brake fluid mfg.; antiseptic m	nt for resins, cellulose esters, waxes,
		vegetable ons, blake field inig., diffisepite in	irg.
	3.	Gross estimate of annual discharge: 6,000	tors (method 2)
В.		atment Point Source (Water and Air)	Tor 3 (merriod 2).
υ.		Waste treatments/disposal (sewage and solids)	· Formed during higherinal decomposition
	١.	of sewage and readily decomposes. Formed d	
		& is readily metabolized. Formed by decomp	
		above identified users. When the compound i	
		released to the air by surface soil spreading o	
	2.	Drinking water treatment (e.g., chlorination)): Not formed during drinking water
		treatment.	Tion formed doing drinking water
	.	D C	
_		n-Point Source:	
c.		Natural Fermentation and spoilage products	
c.	ι.		of many vegetable substances.
c.	۱.		of many vegetable substances.
c.	ι.		of many vegetable substances.
c.		Chemical reactions (Air) propyl radical + osyge	
c.	2.	propyl radical + hydroxyl radical → propanol +	n + propyl peroxide radical to (ygen; (water) hydroxylation of propyle
c.	2.	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate from	en + propyl peroxide radical to sygen; (water) hydroxylation of propyler om biological solid waste and industrial
c.	2.	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate fro sludges/slurries where it is a reactant/unreact	n propyl peroxide radical c (ygen; (water) hydroxylation of propyle) om biological solid waste and industrial te: product and from solid wastes of abov
c.	2.	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate fro sludges/slurries where it is a reactant/unreact Man caused non-point source Constituent of	n propyl peroxide radical c (ygen; (water) hydroxylation of propyle) om biological solid waste and industrial te: product and from solid wastes of abov
	 3. 4. 	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate fro sludges/slurries where it is a reactant/unreact Man caused non-point source Constituent of polish, floor wax, general laboratory use.	en + propyl peroxide radical to cygen; (water) hydroxylation of propyler om biological solid waste and industrial te product and from solid wastes of above domestic waste, evaporation from nail
	 3. 4. 	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate fro sludges/slurries where it is a reactant/unreact Man caused non-point source Constituent of	en + propyl peroxide radical to tygen; (water) hydroxylation of propyler om biological solid waste and industrial tel product and from solid wastes of above domestic waste, evaporation from nail
	 3. 4. 	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate fro sludges/slurries where it is a reactant/unreact Man caused non-point source Constituent of polish, floor wax, general laboratory use.	en + propyl peroxide radical to tygen; (water) hydroxylation of propyler om biological solid waste and industrial tel product and from solid wastes of above domestic waste, evaporation from nail
	 3. 4. 	propyl radical + hydroxyl radical → propanol + Solid waste leachate Present in leachate fro sludges/slurries where it is a reactant/unreact Man caused non-point source Constituent of polish, floor wax, general laboratory use.	en + propyl peroxide radical to cygen; (water) hydroxylation of propyler om biological solid waste and industrial te product and from solid wastes of above domestic waste, evaporation from nail

Chemical: propylamine CAS Nomenclature: 107-10-8		2. Structure:
Class: aliphatic		
Sources: A. Industry Poin	nt Source (Water and Air) turers: Organic chemical industry.	
2. Users: corrosion	Mfg. rubber chemicals, dyestuffs, ph n inhibitors, textile and leather finisl	arr aceuticals, agricultural chemicals, hing resins.
B. Treatment Po1. Waste tre	rimate of annual discharge: 600 tons oint Source (Water and Air) eatments/disposal (sewage and solids) at and biological decomposition of sol	: Potentially formed during sewage
2. Drinking treatmen	water treatment (e.g., chlorination)): Not formed during drinking water
C. Non-Point Son Natural	ource: Should occur natur all y as bioorgan	ic degradant; general runoff.
2. Chemica	l reactions Propyl radical + hydra	z ne → propylamine
3. Solid war as consti4. Man cau	ste leachate <u>Present in leachate fro</u> tuent and from wastes where compoun sed non-point source <u>Laboratory use</u>	er solid wastes with biological materia is present.
The designings have designed and designed and designed and designed as the design and de	(persistence): Biodegradable (categor	
Effective treatme	ent method: Biological treatment (8	3: -95%); activated carbon (90-100%)

Cla		aryl alkane (benzene derivative)	- CH-CH-CH
_	-		
		ustry Point Source (Water and Air) Manufacturers: Petroleum refining; by-product of	cumene mfg.
	2.	Users: Mfg. methyl styrene; textile dyeing, printing asphalt and naphtha constituent.	ng solvent for cellulose acetate
В.	Tre	Gross estimate of annual discharge: 2,000 tons (meatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): No or degradation of solid wastes. Incineration of organ and combustion of fuels will release this compound	t produced during sewage treat unic, petroleum or coal wastes
	2.	Drinking water treatment (e.g., chlorination): Not treatment.	produced during drinking wate
		n-Point Source:	
c.		Natural Petroleum.	
c.	1.		
c.	 2. 3. 	Chemical reactions None identified. Solid waste leachate Will leach from solid we stes a constituent.	
•	 2. 3. 4. 	Chemical reactions None identified. Solid waste leachate Will leach from solid we stes a constituent. Man caused non-point source General uses of asphilaboratory use; use as a solvent.	alt and naphtha; general
•	 2. 3. 4. 	Chemical reactions None identified. Solid waste leachate Will leach from solid we stes a constituent. Man caused non-point source General uses of aspha	

		alcohol	
Sour	-		CH3 OH CH3
		ustry Point Source (Water and Air) Manufacturers: Extraction of essential oils, fract wood processing industry.	ional distillation of pine oils,
	2.	Users: Perfume mfg.; soap mfg.; hydrocarbor: so esters and ethers; disinfectants; antioxidants; me di	
		Gross estimate of annual discharge: 100 tons (met	hod 3).
3.		atment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Ex sewage treatment/solid waste decomposition in ma	pected to be formed during
	2.	Drinking water treatment (e.g., chlorination): Natreatment.	ot formed during drinking water
с.		n-Point Source: Natural Several essential oils; pine oil compone	nt; forest runoff.
	2.	Chemical reactions None identified.	
		Solid waste leachate Leaches from municipal was sludges/sourcies where compound is unrecovered remained managed non-point source. General use of soa	actant in above industries.
Biod	legr	medicines, flavorings. adability (persistence): Difficult to degrade (acteg	ory 3).

<u></u>	5 No	omenclature: <u>632-21-3</u>			H-C-C	0 (1
Cla	iss: _	halogenated ketone			H-C-C)—(<u>—</u> n
		ustry Point Source (Water of Manufacturers: None id			Ċı	CI
	2.	Users: None identified.				
В.	Tre	Gross estimate of annual catment Point Source (Water Waste treatments/disposal during chlorination of sewage decomposition of sewage	r and Air) (sewage and sol vage effluent pri	ids): Produce or to discharge	d in very small qu . Not produced	uantities by biologi
			or some wastes,	or by incinerdi		
	2.	Drinking water treatment by chlorination process.		ion): <u>Produce</u>	d in very small qu	vantities
С.	No		(e.g., chlorinat	ion): <u>Produce</u>	d in very small qu	vantities
С.	No 1. 2.	n-Point Source: Natural None. Chemical reactions Achydrogen chloride. Solid waste leachate Wiff present. Man caused non-point sou	(e.g., chlorinat	ion): <u>Produce</u> → 1,1, ndfill sewage o	d in very small quantum of the state of the	acetone +
	No 1. 2. 3.	n-Point Source: Natural None. Chemical reactions Achydrogen chloride. Solid waste leachate William if present.	cetone + HOCI	ion): Produce 1,1, ndfill sewage of	d in very small quantum of the state of the	acetone +

Chemical: tetrachlorobiphenyl	2. Structure:
CAS Nomenclature:	armon, alternative
Class: halogenated biphenyl (benzene derivative)	Cl ₂ Cl
Sources:	
A. Industry Point Source (Water and Air)	
1. Manufacturers: Organic chemical industry.	and the same of th
2 Usore: After the print the first of the fi	
2. Users: Mfg. electrical insulation; fire resistant high temporature lubricants alected and alected alected and a	neaf franster and hydraulic fluids;
high temperature lubricants; elastomers; adhes pigments and waxes; heat sensitive paper.	
programs and waxes/ near sensitive paper.	
3. Gross estimate of annual discharge: 500	tuns (method 6).
B. Treatment Point Source (Water and Air)	
1. Waste treatments/disposal (sewage and solids):	Potentially formed in small quantiti
during chlorination of sewage containing biph	e yl. Not formed during biological
decomposition of sewage or municipal wastes.	ncineration of municipal and
industrial wastes releases PCBs.	
2. Drinking water treatment (e.g., chlorination):	Determined to the state of the
quantities during chlorination of drinking water	rotentially formed in small
quelinities defining and married of difficulty water	
C. Non-Point Source: 1. Natural None	
1. INSTUIRS INOTICE	
2. Chemical reactions <u>Biphenyl + HOCl</u> →P	;B
3. Solid waste leachate Compound leaches from	municipal wastes and industrial
wastes containina PCBs.	
4. Man caused non-point source General use of	CB containing materials, e.g., pair
coatings, adhesives, paper, electrical insulat	on, etc.
Biodegradability (persistence): Persistent (>18 months)	(category 5).
Effective transfer and a state of a large of the state of	000/1
Effective treatment method: Activated carbon (90-	J U %).

. Chemi	ical: tetrachloroethane	2. Structure:
	Nomenclature:	
. Class:	non-cyclic halogenated alkane	
	es: ndustry Point Source (Water and Air) Manufacturers: Organic chemical industry	н н
2	. Users: Mfg. 1,1-dichloroethylene; solvent for materials; insecticide mfg.; bleach mfg.; pain fumigant; cleansing and degreasing metals; phofoils and fats; organic synthesis, herbicide;	nt, varnish, rust remover mfg.; soil oto films, resins and waxes; extractant
B. Ti	. Gross estimate of annual discharge: 2,000 to reatment Point Source (Water and Air) . Waste treatments/disposal (sewage and solids): of sewage or solid wastes, or by incineration. inefficient solvent recovery/recirculation.	: Not formed by biological decompositi
2	. Drinking water treatment (e.g., chlorination) of treated water.	Potentially formed during chlorination
C. N	Non-Point Source: Natural None.	
3	 Chemical reactions (Air) ethyl radital + chlorin (Water) unsaturated alkane + HOCl→ tetrachlor Solid waste leachate Will leach from munici compound is present. Man caused non-point source General use of 	pal or industrial wastes in which this
. Biode	chlorinated rubber. General use as laboratory gradability (persistence): Refractory (category 5)	
Effect	ive treatment method: Activated carbon (90~10	C%).

CHC	emic	al: tetrachloroethylene	2. Structure:
		omenclature: 127-18-4	C C
Cla	ss:	non-cyclic halogenated alkene	- $c=c$
Sour A.	Indi	ustry Point Source (Water and Air) Manufacturers: Organic chemical industry.	
	2.	Users: Dry cleaning operations; metal degreasing rubber, gums; caffeine from coffee; remove soot fi removers, printing inks; mfg. trichloroacetic academfg. of fluorocarbons.	rom industrial boilers; mfg. paint
В.		Gross estimate of annual discharge: 2,000 tons (atment Point Source (Water and Air)	method 2).
		Waste treatments/disposal (sawage and solids): tion of sewage or solid wastes, or by incineration and inefficient solvent recovery/recirculation.	Not formed by biological decompose. Released to air due to its volatilit
	2.	Drinking water treatment (e.g., chlorination): Fo	
C .		n-Point Source: Natural None.	
		Chemical reactions (Air) ethylene + chlorine rad ca (water) unsaturated organics + HOCl - tetrach pro Solid waste leachate None identified.	
	4.	Man caused non-point source General consur of General use of dry cleaning solvents, spray consumptions of the chlorinated was admilited (participated):	
	degr	adobility (persistence): cniorinatec wa	iter.

	mical: tetradecane	2. Structure:
CAS	Nomenclature:	C_{H_3} — $(C_{H_2})_{12}$ — C_{H_3}
Clas	ss: unsubstituted alkane	CH_3
Sour	ces:	The state of the s
Α.	Industry Point Source (Water and Air)	
	1. Manufacturers: Petroleum refining.	
	2. Users: Organic synthesis: solvent: standar	d*dd
	2. Users: Organic synthesis; solvent; standar paraffin products; rubber industry; paper products; paper produc	
	Constituent in waterborne waste of polyole	
	Constituent in waterseine waste of polyers	on managering.
	3. Gross estimate of annual discharge: 80	00 tons (method 3).
	Treatment Point Source (Water and Air)	·
	1. Waste treatments/disposal (sewage and so	lids): Not formed during sewage treatmen
	or decomposition of solid wastes. Incinera	
	sludges and slurries containing petroleum o	constituents releases this compound to the
	air.	
	 Drinking water treatment (e.g., chlorinat purification. 	tion): Not formed during drinking wate
_	Non-Point Source: 1. Natural Constituent in paraffin fraction	on of petroleum.
	2. Chemical reactions None identified.	
	3. Solid waste leachate Will leach from ge	neral municipal and industrial solid wast
`	and will leach from solid sludges and slur	
	paraffin utilizing industries, and wastes in	
	4. Man caused non-point source Componen	at in a micipal waste and wastewater from
•	general use of paraffins. Also laboratory	
	motorboat exhaust, and from general use	
. Bio	odegradability (persistence): Low persistence	
	category 2).	11 2 monits for complete degradation,
	fective treatment method: Biological treatment	nt (80-95%), activated earlies (90-100%)
		in (00 7376), activated carbon (70-10076
10	ncineration (>99%).	

	al: thiomethylbenzothiazole	2. Structure:
CAS No	omenclature:	~ /
Class:	benzothiazole	
Sources		5 5-CH3
	wstry Point Source (Water and Air) Manufacturers: None identified.	
2.	Users: None identified.	
B. Tre	Gross estimate of annual discharge: <u>5 tons (me</u> atment Point Source (Water and Air) Waste freatments/disposal (sewage and solids):	
2.	Drinking water treatment (e.g., chlorination):	No information.
	n-Point Source: Natural No information.	
	Chemical reactions None identified.	
	Solid waste leachate No information. Man caused non-point source No information.	
Biodegr	adability (persistence): Very refractory to biode j	radation (category 5).
Effective	ve treatment method: Activated carbon.	

		aryl alkane (benzene derivative)			
					
	rces:	: ustry Point Source (Water and Air)			
Λ.		Manufacturers: Petroleum refining, coal tar disti	Hation		
	2.	Users: Mfg. benzene derivatives, caprolactam, perfumes; specialty chemical mfg.; solvent recover chemical mfg.; component gasoline; solvent for paramost oils, rubber, and vinyl organosols; diluent and	y plant ints an	ts; mfg. TN d coatings, per in nitro	T; organic gums, resins,
	3	adhesive solvent in plastic toys and model airplane Gross estimate of annual discharge: 10,000 tons (n	s; dete	raent mfa.	asphalt naphtha c
В.		atment Point Source (Water and Air)	100	1/10	
υ.		Waste treatments/disposal (sewage and solids): No	ot prod	uced during	i sewage treatmen
	- •	or degradation of solid wastes. Incineration of org			
		and combustion of fuels will release this compound	to the	air.	
	2.	Drin king water treatment (e.g., chlorination): No treatment.	ot prod	uced during	drinking water
c.		n-Point Source: Natural Coal tar, petroleum.			
	2.	Chemical reactions None identified.			
	3.	Solid waste leachate Will leach from solid wastes	in wh	ich compou	ınd is present as
	4	a constituent. Man caused non-point source General uses of aspl		ما معملات	gonoul lake
	т.	use; use as a solvent; combustion of gasoline; ade	<u>iair an</u> Lhobhi	a napnina; es	general laboratory
Bioc	degr	adability (persistence): Difficult to degrade bio ogi			
			·		

0-1 <u></u>		omenclature: 120-82-1	
Clo	zs s: _	halogenated benzene derivative	- CI q
	Ind Ind	ustry Point Source (Water and Air) Manufacturers: Organic chemical industry; pe	esticide mfg.
	2.	Users: Solvent for high melting products; cools glass tempering; mfg. 2,5-dichlorophenol; polysynthetic transformer oil; lubricants; heat transfer	ster dyeing; termite preparations;
В.	Tre	Gross estimate of annual discharge: 500 tons (eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): treatment or decomposition of solid wastes.	
			organic wastes in which trichloro-
	2.	benzene is a constituent will release small quartion of municipal refuse. Drinking water treatment (e.g., chlorination): chlorination.	·
с.		Drinking water treatment (e.g., chlorination):	_
с.	No 1. 2.	tion of municipal refuse. Drinking water treatment (e.g., chlorination): chlorination. on-Point Source: Natural None. Chemical reactions (Air) phenyl radical + chlorination benzene + HOCl - trichlorobenzene + water. Solid waste leachate Will leach from industrial component. Man caused non-point source General labora of the state of the source of	Formed in small quantities during ne → trichlorobenzene; (Water) I sludges/slurries of which it is a ry use; agricultural runoff; termite
C.	No 1. 2. 3.	tion of municipal refuse. Drinking water treatment (e.g., chlorination): chlorination. on-Point Source: Natural None. Chemical reactions (Air) phenyl radical + chlorination benzene + HOCl -> trichlorobenzene + water. Solid waste leachate Will leach from industrial component.	Formed in small quantities during ne → trichlorobenzene; (Water) I sludges/slurries of which it is a ry use; agricultural runoff; termite

		C_{1_2}
_		halogenated biphenyl (benzene derivative)
		State Point Source (Water and Air) Manufacturers: Organic chemical industry.
	2.	Users: Mfg. electrical insulation; fire resistant heat transfer and hydraulic fluids; high temperature lubricants; elastomers; adhesives; paints, lacquers, varnishes, pigments and waxes; heat sensitive paper.
В.	Tre	Gross estimate of annual discharge: 500 tons (method 6). eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Potentially formed in small quantities during chlorination of sewage containing biphenyl. Not formed during biological decomposition of sewage or municipal wastes. Incineration of municipal
	2.	Drinking water treatment (e.g., chlorination): Potentially formed in small quantities during chlorination of drinking water containing biphenyl.
с.	No 1.	on-Point Source: Natural None
	2.	Chemical reactions Biphenyl + HOCl → PCB
		Solid waste leachate Compound leaches from municipal wastes and industrial wastes containing PCBs. Man caused non-point source General use of CB containing materials, e.g., pai coatings, adhesives, paper, electrical insulation, etc.
Bio	degr	radability (persistence): Persistent (>18 months) (category 5).

CA2 I	cal: 1,1,2-trichloroethane	_ 2. Structure:
	Nomenclature: 79-00-5	- C1 C1
Class:	non-cyclic halogenated alkane	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Source		-
	dustry Point Source (Water and Air) Manufacturers: Organic chemical industry.	
2.	Users: Mfg. 1,1-dichloroethylene; solvent for shl organic materials (fats, oils, resins, etc.); organic	
B. Tr	Gross estimate of annual discharge: 2,000 tons (meatment Point Source (Water and Air)	
- Parameter	decomposition of sewage or solid wastes, or by no its volatility and inefficient solvent recovery/recir	Not produced by biological ineration. Released to air due
2	The state of the s	
ku o	Drinking water treatment (e.g., chlorination): For chlorination process.	med in small quantity by
C. N	on-Point Source: Natural None.	med in small quantity by
C. N. 1.	on-Point Source:	1,1,2-trichloroethane; (Wate
C. N. 1. 2. 3.	chlorination process. on-Point Source: Natural None, Chemical reactions (Air) ethyl radical + chlorine - unsaturated alkane + HOCl → 1,1,2-trichloroe har	1,1,2-trichloroethane; (Wate ne + water. nd industrial wastes, if presen
C. No. 1. 2. 3. 4.	chlorination process. on-Point Source: Natural None, Chemical reactions (Air) ethyl radical + chlorine - unsaturated alkane + HOCl → 1,1,2-trichloroe har Solid waste leachate Will leach from municipal a	1,1,2-trichloroethane; (Watene + water. nd industrial wastes, if presen
C. No. 1. 2. 3. 4.	chlorination process. on-Point Source: Natural None. Chemical reactions (Air) ethyl radical + chlorine - unsaturated alkane + HOCl → 1,1,2-trichloroe har Solid waste leachate Will leach from municipal a Man caused non-point source General use of hlowater. General laboratory use.	1,1,2-trichloroethane; (Watene + water. nd industrial wastes, if presen
2. 3. 4. Biodeg	chlorination process. on-Point Source: Natural None. Chemical reactions (Air) ethyl radical + chlorine - unsaturated alkane + HOCl → 1,1,2-trichloroe har Solid waste leachate Will leach from municipal a Man caused non-point source General use of hlowater. General laboratory use.	1,1,2-trichloroethane; (Watene + water. nd industrial wastes, if presen

	75 5	non-cyclic halogenated alkene		$C_1 \subset C_1$
C	urces:		The state of the s	CI-C-A
	_	ustry Point Source (Water and Air)		
Λ.		Manufacturers: Organic chemical industry.		
	١.	Mandidacidies. Organic chemical massify.		
			·	
			······································	
	2.	Users: Dry cleaning operations and metal degre		
		greases, waxes; solvents for greases and waxes from	asing; soi	wool etc and
		caffeine from coffee; mfg. organic chemicals; so		
		ethers; solvent for dyeing; refrigerant and heat e		
		fumigant; anesthetic.	Achange	rigora, organic symmests,
	3.	Gross estimate of annual discharge: 10,000 ton	s (method	2).
В.		atment Point Source (Water and Air)		
٠.		Waste treatments/disposal (sewage and solids):		
		Not form	ed durina	biological decomposition
		of sewage or solid wastes, or by incineration. D	ischaraec	to air due to volatility
		and inefficient solvent recovery/recirculation.	- 5-1	

	2.	Drinking water treatment (e.g., chlorination):	Formed di	uring chlorination process.
		,		
				
с.	No	n-Point Source:		
		Natural None.		
				-
				
	2.	Chemical reactions(Air) Ethylene + chlorine → 1, 1	1,2 trichle	proethylene; (Water) unsatura
	2.	Chemical reactions(Air) Ethylene + chlorine → 1, 1 alkanes + HQCl → 1, 1, 2-trichloroethylene.	1,2 trichle	proethylene; (Water) unsatura
		Chemical reactions(Air) Ethylene + chlorine → 1, 1 alkanes + HOCl → 1,1,2-trichloroethylene. Solid waste leachate Will leach from municipal		
	3.	alkanes + HOCl → 1,1,2-trichloroethylene. Solid waste leachate Will leach from municipa this compound is present.	ıl or indus	trial wastes in which
	3.	alkanes + HOCl → 1,1,2-trichloroethylene. Solid waste leachate Will leach from municipa this compound is present.	ıl or indus	trial wastes in which
	3.	alkanes + HOCl → 1,1,2-trichloroethylene. Solid waste leachate Will leach from municipa this compound is present. Man caused non-point source General use of cr	ıl or indus	g solvents and other
Bio	3. 4.	alkanes + HOCl → 1,1,2-trichloroethylene. Solid waste leachate Will leach from municipa this compound is present. Man caused non-point source General use of cr compounds containing the chemical. General	ıl or indus	g solvents and other
Bio	3. 4.	alkanes + HOCl → 1,1,2-trichloroethylene. Solid waste leachate Will leach from municipa this compound is present. Man caused non-point source General use of cr	ıl or indus	g solvents and other

Class: non-cyclic halogenated alkane Class: non-cyclic halogenated alkane Sources: A. Industry Point Source (Water and Air) 1. Manufacturers: Organic chemical industry.	C1 1—C—F
A. Industry Point Source (Water and Air)	Į.
	C1
2. Users: Mfg. aerosol sprays; mfg. commercial regigeration equipments for polyurethane foams; cleaning compounds mfg.; solvent; fire exintermediate.	tinguisher; chemical
3. Gross estimate of annual discharge: 1 ton (method 2). B. Treatment Point Source (Water and Air) 1. Waste treatments/disposal (sewage and solids):	
chiorination Tornea III shall qu	
C. Non-Point Source: 1. Natural None.	
2. Chemical reactions (Air) methyl radical + chlor ne → trichloromethy trichloromethyl radical + fluorine → trichlorofic promethane	/l radical;
3. Solid waste leachate Will leach from municipal/industrial wastes compound is present.	
4. Man caused non-point source General use of stray cans, polyuret compounds/solvents, fire extinguishers. General use of chlorinate Blodegradability (persistence): Persistent (category 5).	
Effective treatment method: Activated carbon (90-100%).	

		omenclature: 88-06-2	· CI J
Cla	ıss:	phenol	
	- ırces		
		ustry Point Source (Water and Air)	Ċı
		Manufacturers: Organic chemical industry;	pesticide mfa.
	2.	Users: Mfg. antiseptics, bactericides, fungion preservatives; used as anti-mildew agent for to	cides, germicides; mfg. wood and glue extiles.
	3.	Gross estimate of annual discharge: 8 tons (n	nethod 5).
В.	Tre	atment Point Source (Water and Air)	
	1.	Waste treatments/disposal (sewage and solids):	: Not produced during biological seway
		treatment or decomposition of solid wastes. For	ormed in small quantities during chloring
		of sewage effluent. Incineration of organic i	ndustrial wastes in which compound is a
		constituent releases small quantities; released	from incineration of municipal refuse.
	2.	Drinking water treatment (e.g., chlorination)	from incineration of municipal refuse.
c.	No	Drinking water treatment (e.g., chlorination): activities. n-Point Source:	from incineration of municipal refuse. Readily formed during chlorination
с.	No	Drinking water treatment (e.g., chlorination): activities.	from incineration of municipal refuse. Readily formed during chlorination
c.	No 1.	Drinking water treatment (e.g., chlorination): activities. n-Point Source:	from incineration of municipal refuse. Readily formed during chlorination
c.	No 1.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl→2,	from incineration of municipal refuse. Readily formed during chlorination
c.	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl→2, Solid waste leachate Will leach from industric component. Also will leach from municipal se	from incineration of municipal refuse. Readily formed during chlorination 4,6-trichlorophenol rial sludges/slurries of which it is a olid wastes.
c.	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl > 2, Solid waste leachate Will leach from industr	from incineration of municipal refuse. Readily formed during chlorination 4,6-trichlorophenol rial sludges/slurries of which it is a olid wastes.
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl > 2, Solid waste leachate Will leach from industric component. Also will leach from municipal so Man caused non-point source Agricultural rugermicide, etc.; general use as laboratory chemical source and source of the sour	from incineration of municipal refuse. Readily formed during chlorination 4.6-trichlorophenol rial sludges/slurries of which it is a olid wastes. off; general use as fungicide, mical; general use of chlorinated wate
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl > 2, Solid waste leachate Will leach from industric component. Also will leach from municipal solid wasted non-point source Agricultural ru	From incineration of municipal refuse. Readily formed during chlorination 4.6-trichlorophenol rial sludges/slurries of which it is a olid wastes. In off; general use as fungicide, mical; general use of chlorinated wate
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl > 2, Solid waste leachate Will leach from industric component. Also will leach from municipal so Man caused non-point source Agricultural rugermicide, etc.; general use as laboratory chemical source and source of the sour	From incineration of municipal refuse. Readily formed during chlorination 4.6-trichlorophenol rial sludges/slurries of which it is a olid wastes. In off; general use as fungicide, mical; general use of chlorinated wate
	No 1. 2. 3.	Drinking water treatment (e.g., chlorination): activities. n-Point Source: Natural None Chemical reactions (Water) phenol + HOCl > 2, Solid waste leachate Will leach from industric component. Also will leach from municipal so Man caused non-point source Agricultural rugermicide, etc.; general use as laboratory chemical source and source of the sour	from incineration of municipal refuse. Readily formed during chlorination 4.6-trichlorophenol rial sludges/slurries of which it is a olid wastes. off; general use as fungicide, mical; general use of chlorinated wate

	cal: n-tridecane lomenclature:	2. Structure:
		CH3-(CH2)-CH
•	unsubstituted alkane	and the state of t
Source		
	dustry Point Source (Water and Air)	
١.	Manufacturers: Petroleum refining.	
2.	Users: Organic synthesis; solvent; standardized h	drocarbon; jet fuel research; mfg
	paraffin products; rubber industry; paper processing	g industry; distillation chaser.
	Constituent in waterborne waste of polyolefin man	ufacture.
વ	Gross estimate of annual discharge: 800 tons	mathad 3)
	eatment Point Source (Water and Air)	nemou o/.
	Waste treatments/disposal (sewage and solids):	lot formed during sewage treatmen
• •	or decomposition of solid wastes. Incineration of	
	sludges and slurries containing petroleum constitue	
	gir.	
	Appropriate framework is a section of the contract of the cont	
2.	Drinking water treatment (e.g., chlorination):	lot formed during drinking water
	purification.	
	AND PRODUCTION OF THE PRODUCTION OF THE PRODUCT OF	
c N	en-Point Source:	
	Natural Constituents in paraffin fraction of te	etroleum.

	1 milet Property and the Commission of the Commi	
2.	Chemical reactions None identified.	
^	C 3c i	
3,	Solid waste leachate Will leach from genera m	nunicipal and industrial solid was
	and will leach from solid studges and sturries of	petroleum retining industry and
Δ	paraffin utilizing industries, and wastes in which Man caused non-point source Component in hu	n n-midecane is a solvent.
<u>-</u>	general use of paraffins. Also laboratory use, h	ighway runoff automobile exhaus
	motorboat exhaust, and from general use of period	oleum oils, tars, etc.
Biode	egradability (persistence): Low persistence (1-1 r	
	tegory 2).	nomina for comprete degradation)
(cai	regory 2).	
		-95%); activated carbon (90–1009

	heterocyclic amine	W CH3
	5	3
2.	Users: None identified.	
B. Tre	Gross estimate of annual discharge: 1 ton or less (method 6) eatment Point Source (Water and Air) Waste treatments/disposal (sewage and solids): Possibly formed during be phase of sewage treatment and biological degradation of solid wastes, wastriazine compounds are constituent.	
2.	Drinking water treatment (e.g., chlorination): No information.	
_	on-Point Source: Natural None	
1.	on-Point Source:	
1. 2. 3.	on-Point Source: Natural None Chemical reactions Possible oxidation product of triazine herbicides.	

	ass: 1	phosphate ester	(=)-0-p-0-(=)
	یر rcesر		
		fustry Point Source (Water and Air)	O
	1.	Manufacturers: Organic chemical industry.	
	2.	Users: Mfg. plasticizers; gasoline additives; insecticide	es: flotation agents, stabilize
		anti-oxidants and surfactants; substitute for camphor (ne	on-combustible); tire retardar
	2		
В.		Gross estimate of annual discharge: 600 tons methode eatment Point Source (Water and Air)	0).
D.		Waste treatments/disposal (se wage and solids): <u>Compor</u>	and not formed during higher
	• •	decomposition of sewage or solid wastes. Small quantit	es released to air during
		incineration of municipal refuse and industrial vastes.	
	2	Drinking who had been dead of the blade of t	1.1 • 1 • 1 •
	۷.	Drinking water treatment (e.g., chlorination): Not for purification.	
		pormedion.	
	NI	on-Point Source:	
<u></u>	170		
c.		Natural Nane	
c.		Natural None.	
С.		Natural None.	
c.	1.		
c.	1.	Chemical reactions None identified.	
c.	2.	Chemical reactions None identified.	strial wastes containing
c.	 2. 3. 	Chemical reactions None identified. Solid waste leachate Leaches from municipal and induplastics.	
c.	 2. 3. 	Chemical reactions None identified. Solid waste leachate Leaches from municipal and induplastics. Man caused non-point source General use of plastics,	
	 2. 3. 4. 	Chemical reactions None identified. Solid waste leachate Leaches from municipal and induplastics. Man caused non-point source General use of plastics, Component of gasoline engine exhaust. Lab us.	surfactants, insecticides.
	 2. 3. 4. 	Chemical reactions None identified. Solid waste leachate Leaches from municipal and induplastics. Man caused non-point source General use of plastics,	surfactants, insecticides.
	 2. 3. 4. 	Chemical reactions None identified. Solid waste leachate Leaches from municipal and induplastics. Man caused non-point source General use of plastics, Component of gasoline engine exhaust. Lab us.	surfactants, insecticides.

	Nomenclature:	CH3-(CH2)-CH3
Class	unsubstituted alkane	On ₃ (12/4 13
Source		
	ndustry Point Source (Water and Air)	
	. Manufacturers: Petroleum refining.	
2		
Z	Users: Organic synthesis; solvent; standard	lized hydrocarbon; jet fuel research; mfg
	paraffin products; rubber industry; paper prodistillation chaser. Constituent in waterbo	
	distribution chaser. Constituent in waterpo	one waste of polyoterin manufacture.
3,	. Gross estimate of annual discharge: 500	tons (method 3).
	reatment Poi nt Source (Water and Air)	
1.	. Waste treatments/disposal (sewage and so	ids): Not formed during sewage treatme
	or decomposition of solid wastes. Incineral	
	and slurries containing petroleum constitute	ents releases this compound to the air.
2.	. Drinking water treatment (e.g., chlorinat	ion): Not formed during drinking water
	purification.	
C N	Jon-Point Source	
	Von-Point Source:	a of netroleum
	Non-Point Source: Natural Constituent in paraffin fraction	n of petroleum.
		n of petroleum.
		n of petroleum.
1.		n of petroleum.
1.	. Natural Constituent in paraffin fraction Chemical reactions None identified.	
2.	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from g	eneral municipal and industrial solid wa
2.	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from gand will leach from solid sludges and slu	eneral municipal and industrial solid was
2.	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from g	eneral municipal and industrial solid was
2. 3	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from gand will leach from solid sludges and sluparaffin utilizing industries, and wastes Man caused non-point source Compone	eneral municipal and industrial solid was rries of petroleum refining industry and in which n-undecane is a solvent. nt in nunicipal waste and wastewater fro
2. 3	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from gand will leach from solid sludges and sluparaffin utilizing industries, and wastes Man caused non-point source Compone general use of paraffins. Also laboratory	eneral municipal and industrial solid was rries of petroleum refining industry and in which noundecane is a solvent. Int in runicipal waste and wastewater fro wuse, highway runoff, automobile exhau
2. 3	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from gand will leach from solid sludges and sluparaffin utilizing industries, and wastes Man caused non-point source Compone	eneral municipal and industrial solid was rries of petroleum refining industry and in which noundecane is a solvent. Int in runicipal waste and wastewater fro wuse, highway runoff, automobile exhau
2. 3	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from gand will leach from solid sludges and sluparaffin utilizing industries, and wastes Man caused non-point source Compone general use of paraffins. Also laboratory	eneral municipal and industrial solid was rries of petroleum refining industry and in which noundecane is a solvent. Int in nunicipal waste and wastewater from use, highway runoff, automobile exhaus of petroleum oils, tars, etc.
2. 3	. Natural Constituent in paraffin fraction Chemical reactions None identified. Solid waste leachate Will leach from gand will leach from solid sludges and sluparaffin utilizing industries, and wastes Man caused non-point source Compone general use of paraffins. Also laboratory motorboat exhaust, and from general use	eneral municipal and industrial solid was rries of petroleum refining industry and in which noundecane is a solvent. nt in nunicipal waste and wastewater fro ouse, highway runoff, automobile exhaut of petroleum oils, tars, etc.

1.	Chemic CAS N	cal: Vinyl benzene omenclature: 100-42	2-5	2. Structure:	Л Ц·~Л II
)		aryl alkane (ber			CHECHZ
	Sources		Zene derivative;		
•	A. Ind	lustry Point Source (Water Manufacturers: Organic Orga			
	2.		polystyrene; mfg. synthet c protective coatings (styren	ne-butadiene latex,	alkyds); chemica
	3.	Gross estimate of annu	ual discharge: 20,000 tons	(method 1).	
	B. Tre	eatment Point Source (W Waste treatments/disp or degradation of solid	Vater and Air) osal (sewage and solids): N d wastes. Incineration of cag els will release this compo	ot produced during	sewage treatment
	2.	America and a second	ent (e.g., chlorination): N		
	-	on-Point Source: Natural None			
	2.	Chemical reactions	None identified.		
		a constituent.	Will leach from solid weste		
	4.	Man caused non-point	source General use of ub	ber, plastics, resins	. Lab use.
5,	Biodegr	adability (persistence):	Difficult to degrade bic og	ically (category 3).	
6.	Effectiv	ve treatment method:	Activated carbon (90-1)09	6); biological treatr	nent (90-100%).

CA		al:xylene	2. Structure:
-	VS No	omenclature: 95-47-6	
Clo	ass:	aryl alkane (benzene derivative)	
Sou	– Jrces	•	
A.	Ind	ustry Point Source (Water and Air)	
	1.	Manufacturers: Petroleum distillation, co organic chemical industry.	oal tar distillation, coal gas distillation,
	2.	Users: Mfg. phthalic acid and anhydride; solvent recovery plants; specialty chemica	mfg. Ferephthalic acid for polyester;
		aviation gasoline, protective coatings mfg rubber cements; dye mfg. intermediate; in	.; solvent for alkyd resins, lacquers, enam
		asphalt and naphtha constituent.	secticide mig., prainaceoncar mig.,
	3.	Gross estimate of annual discharge: 150	,000 tons (method 1).
В.		atment Point Source (Water and Air)	
	١.	Waste treatments/disposal (sewage and sol or degradation of solid wastes. Incineratio and combustion of fuels will release this co	n of organic, petroleum, or coal wastes,
	2.	Drinking water treatment (e.g., chlorinat treatment.	ion): Not produced during drinking water
c.	No		ion): Not produced during drinking water
c.	No 1.	n-Point Source:	ion): Not produced during drinking water
с.	No 1.	n-Point Source: Natural Coal tar, petroleum. Chemical reactions None identified. Solid waste leachate Will leach from sol	ion): Not produced during drinking water
с.	No 1. 2. 3.	n-Point Source: Natural Coal tar, petroleum. Chemical reactions None identified. Solid waste leachate Will leach from solas a constituent. Man caused non-point source General us	id westes in which compound is present
	No 1. 2. 3.	n-Point Source: Natural Coal tar, petroleum. Chemical reactions None identified. Solid waste leachate Will leach from solas a constituent.	id westes in which compound is present es of asphalt and naphtha; general hau.

APPENDIX D

THE NATIONWIDE OCCURRENCE OF ORGANIC COMPOUNDS
IDENTIFIED IN DRINKING WATER

THE NATIONWIDE OCCURRENCE OF ORGANIC COMPOUNDS IDENTIFIED IN DRINKING WATER

Part I: EPA Water Supply Division Listing as of 11/25/74

	Reference Numbers	189, 203	188, 20%		188, 193, 177, 192, 198, 207, 176, 208, 209,	171	176, 177, 204, 209	8		188, 195, 104		188	33, 198, 204	198	190, 192, 193, 177, 108, 111, 176, 209	198, 204	505	· σ	081	
	Others		ben-terminantistylet.		Pittsburgh PA, unspecified cities in NW Georgia, Bronson MI			Carville LAª, Vicksburg MSª, Cape	Girardeau MO*, Omaha NB*, St. Louis MO*, Burlington IA*, Jefferson City MO*, several unspecified cities	Cedar Rapids IA, Marshalltown IA,	Oskaloosa IA, Waterloo IA, Davenport IA, Iowa City IA, Des Moines IA				Philadelphia (tentative), Pittsburgh PA	A CARACTER AND A CARA		unspecified city	Philadelphia PA (tentative)	A continue of the second secon
	A9 pidqləbblid9		×		×		×								×]
	Al pwmuttO		×	_	×			Ц		_					×	<u> </u>	×			_
	Seattle WA		×	_	×		L			_	,	_	_	L		_			1	1
	Miami FL		×	_	×	_	×			_		<u> </u>	_	L	×	L		_	\downarrow	1
•	Kansas City KS & MO			_		_	_	۴×		×	,	-	_		ļ	_			1	_
	Mashington DC			×						L					×	L				
	Al səmA	×	_						· · · · · · · · · · · · · · · · · · ·									-	- 1	×
	MI əllivanav∃	×				 							ļ 			<u> </u>		_	į	
	HO itennioni D		×		×		×						×	×	×	×		1	7	-
	Mew Orleans LA		×		×	×	×			×		×	-		×					1
	Compound	acenaphthylene (1)	acetaldehyde (2)	acetic acid (3)	acetone (4)	acetophenone (5)	acetylene dichloride (6)	aldrin (7)		atrazine (8)			barbital (10)	behenic acid, methyl ester (11)	benzene (12)	benzene sulfonic acid (13)	benzoic acid (14)	benzopyrene (15)	penzomidzole (10)	penzonniopnene (1/)

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THE NATIONWIDE OCCURRENCE OF ORGANIC COMPOUNDS IDENTIFIED IN DRINKING WATER

Part I: EPA Water Supply Division Listing as of 11/25/74

Reference	Numbers	188, 198, 33, 204	176, 177	193, 177, 176	176	188, 191, 192, 35, 194, 195, 108,	1,51,178, 13,	188, 191, 177, 194, 108, 203, 204, 209		193, 177, 176	193, 177, 176	111	177, 176	1 1	188, 209	188, 35, 177, 108, 111, 204, 209					188, 198	193, 177, 108, 111, 176, 209	190	198, 204
	Others					See List A.		see List B.						Lawrence MA		Cape Girardeau MO, Dayton OH,	Huntington WV, Indianapolis IN,	Oklahoma City OK, Passaic Valley	NJ, Topeka KS, Waterbury CT,	Wilmington DE		THE PROPERTY OF THE PROPERTY O	Philadelphia (tentative)	
Aq pidqləbbli	44					×		×								×						×		
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AW əltta	ēς					×	\perp															_	_	
ami FL	W					×		×							×	×					_	×	L	
insas City KS & MO	Κ¹					×															×			
DO notgnidza	W					×		×	×			×				×						×	Γ	
Al sən	ıΑ						7											***************************************						
MI əllivzna	E^					×		×																
HO itannion	(C!	×				×	7	×							×	×						×		×
AJ sneetro we	N	×	×	×	×	×	†	×		×	×		×		×	×					×	×	H	
	Сотроина	benzyl butyl phthalate (18)	borneol (19)	bromobenzene (20)	bromochlorobenzene (21)	bromodichloromethane (22)	\60/	bromotorm (23)	bromoform butanal (24)	bromophenyl phenyl ether (25)	butyl benzene (26)	butyl bromide (27)	camphor (28)	e-caprolactam (29)	carbon disulfide (30)	carbon tetrachloride (31)					chlordane (32)	chlorobenzene (33)	1,2-bis-chloroethoxyethane (34)	b-chloroethyl methyl ether (35)

APPENDIX D	THE NATIONWIDE OCCURRENCE OF ORGANIC COMPOUNDS IDENTIFIED IN DRINKING WATER	Part I: EPA Water Supply Division Listing as of 11/25/74
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Reference	188, 192, 193, 35, 177, 195, 176, 207, 204, 198, 13, 108, 111, 194, 203, 209	194, 203	188, 194, 203, 199	177	176	188, 177, 176	177, 176	9	188, 104, 198, 201					opposite the second of the sec	198, 201*		188, 111
Others	See List C.		Brandenburg KY, Uniontown KY, Henderson KY			- Attendionistic also a complemental for the complemental and complemental appropriate and complemental and	The second secon		Cedar Rapids IA, Oskaloosa IA, Waterloo IA, Iowa Falls IA, Sioux	City IA, Fort Dodge IA, Davenport	IA, Iowa City IA, Des Moines IA,	skburg MS",	Girardeau MC", Cmaha NB", St.	City Mo*	Carville LA, Vicksburg MS ^a , Cape	Girardeau MOª, Omaha NBª, Buritnaton IAª, Jefferson City MOª	1
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Al pwmuttC	×													-			
AW altti.e2	× -				L					,,,,,	·	nga silko			ļ		Ш
Jimpih!		~													_		
Kansas City KS & MO	<u> </u>					_			×	J_ = .					×		
DO noteninabW	× .				_							dings, or Dain	~~~		-	***	×
Al samA									× _		n - ******				 -		
Evansville IN		×	×						ļ		K Magazine	CQ. 2007-	,				
Cincinnati OH	×								ļ						· •		
Mew Orleans LA	×		×	×	×	×	×		×						Ľ		'×
Compound	chloroform (36)	chlorohydroxy benzopherwne (37)	bis-chloroisophropyl ether (38)	chloromethy! ether (39)	chloromethyl ethyl ether (40)	m-chloronitrobenzene (41)	3-chloropyridine (42)	o-cresol (43)	DDE (44)		-				DDT (45)		decane (46)

E NATIONWIDE OCCURRENCE OF ORGANIC COMPOUNDS IDENTIFIED IN DRINKI

THE NAT	THE NATIONWIDE OCCURRENC	Part I:	REN EPA	SE C	OF C	RG/	i N N	isi o	MP in	E OF ORGANIC COMPOUNDS IDENTIFIED IN DRINKING WATER Water Supply Division Listing as of 11/25/74	IER
			İ	1	ļ	:		ŀ			
Compound	New Orleans LA	HO itonnioni D	Evansville IN	Al səmA	OM 8 23 WES PROPERTY	Kansas Cily KS & MO	Miami FL Seattle WA	Al pwmuttO	Philadelphia PA	Others	Reference Numbers
dibromobenzene (47)	×			-	 		-				
dibromochloromethane (48)	×	×	×		×	X X	×	×	×	See List D.	188, 191, 192, 35, 194, 195, 108, 204, 203, 198, 209
dibromodichloroethane (49)	×	 				1	<u> </u>	<u> </u>	-	THE TOTAL THEORET CHARGE AND ADDRESS OF THE CHARGE	188
di-t-butylp-benzoquinone (50)	×			 		-	 	-	-	The state of the s	188
dibutyl phthalate (51)	×	×	 		×	: 	-	<u>}</u>	· •		188, 111, 33, 198, 204
1	×	×			×	}	×		×		188, 193, 177, 111, 176, 209
dichlorodifluoroethane (53)		 			×	 	-			Comprehension of the comprehen	
2-dichloroethane (54)	×	×			×		×	-	×		193, 35, 177,
dichloroethyl ether (55)	×		×		-	ļ			×	Brandenburg KY, Uniontown KY, Henderson KY	188, 190, 177, 194, 203, 178, 199, 209
dieldrin (56)	×	×		 	1	×	^ x	×	×	Waterloo IA, lowa	188, 104, 8, 201 ^a , 209
	·								-	I all a louis (A. Dor Matter 1)	
										The lower Clip in the wolles in the contract of the contract o	
				·						Girarded MO* Omaha N8* St	
										Louis MOa, Burlington IAa, Jeffer-	
										son City MO ^a , several unspecified	
	-									cities	
diethyl phthalate (57)	×	_			-		-	ļ	-	The second secon	188, 33, 198, 204
di(2-ethyl hexyl) phthalate (58)	×	×		-	-	 	-	-	<u> </u>	Waterloo IA	1 .
dihexyl phthalate (59)	×			!	-	-				A CONTRACTOR OF THE PARTY OF TH	
dihydrocarvone (60)	×										188
di-isobutyl carbinol (61)				-	-	1	_	_	-		De sage manifestation au commenciale de la companya
di-isobutyl phthalate (62)	×				.			ļ	-	Control of the contro	188
The second secon	Contraction of the last of the	-			-			-		And the same of th	The second secon

APPENDIX D

THE NATIO AWIDE OCCURRENCE OF ORGANIC COMPOUNDS IDENTIFIED IN DRINKING WATER

Part I: EPA Water Supply Division Listing as of 11/25/74

STALLE ST. COM. THE LEW ST. T	Reference Numbers	177, 176	177	q	177	177		1//	188, 192, 209	188	198, 204	203	33, 198,	e 188, 198, 201 ^a		188, 192, 13, 198, 204, 209		188, 189, 193, 177, 194, 203, 176	A Commission of the Commission	199	199	188, 192
The second secon	, Others								Pittsburgh PA			and the same of th		Carville LA, Vicksburg MS ² , Cape	•	Pittsburgh PA		Carville LA	THE REAL PROPERTY AND THE PROPERTY AND T	Abbeville SC	Abbeville SC	Pittsburgh PA
4	A9 pidqləbblid9															×						
	AI pwmuttO															×						
	AW əlttbə2		_								L.					×			_	L		
•	Miami FL		<u> </u>	_					×			_	L			<u> </u>	_		1		L	lacksquare
-	Kansas City KS & MO		_	_	Ц		Ш		_			_		×				<u> </u>	_	L		
-	DO notenidseW	_	L		Ц						_	L					×		_		L	
	Al səmA		_				Ц	Ш			ļ	_	_			_	L	×	\perp		L	_
	Evansville IN		_	_							_	×	***			_		×	\perp			
	HO itonnioni D										×		×			×						
	New Orleans LA	×	×		×	×		×	×	×		×		×		×		×				×
	Compound	1,2-dimethoxybenzene (63)	1,3-dimethyl naphthalene (64)	2,4-dimethyl phenol (65)	dimethyl phthalate (66)	dimethyl sulfoxide (67)	4,6-dinitro-2-aminophenol (68)	2,6-dinitrotoluene (69)	dioctyl adipate (70)	dipropyl phthalate (71)	docosane (72)	n-dodecane (73)	eicosane (74)	endrin (75)		ethanol (76)	ethylamine (77)	ethyl benzene (78)	2-ethyl-n-hexane (79)	cis-2-ethyl-4-methyl-1, 3-dioxolane (80)	trans-2-ethyl-4-methyl-1, 3-dioxolane (81)	o-ethyl toluene (82)

THE NATIONWIDE OCCURRENCE OF ORGANIC COMPCUNDS IDENTIFIED IN DRINKING WATER

Part I: EPA Water Supply Division Listing as of 11/25/74

of Marian	Reference Numbers	176 (dropped from 3/75 list)	8, 198, 2018	198, 201ª	188	193 (tentative), 177, 194, 203	180	198, 2018		188, 194, 203, 209	204	206		188, 209	1774 176	189, 193, 176	88	198
, a manusity of seconds and a second	Others	1	Carville LA*, Vicksburg MS*, several unspecified cities	Carville LA* Vicksburg MS*,	But ingran Ith	The property and the party of t		$\sim =$	Louis MO ^a , Burlington 'A ^a ', Jeffer- son City MO ^a	The state of the s	The state of the s	Lawrence MA	and the second s					
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THE NATIONANDE OCCURRENCE OF ORGANIC COMPOUNDS IDENTIFIED IN DRIVE ING WATER

Part 1: EPA Water Supply Division Listing as of 11/25/74

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APPENDIX 3

THE NATIONWIDE OCC. RRENCE OF CREANIC COMPOUNDS IDENTIFIED IN DRINKING WATER Par . EPA Water Supply Division Listing as of 11/25/74

	Reference	190	F.)c (86)	200		9	33, 78, 204			177, 188, 108		98,	33, 198, 204	188, 35, 177, 194, 195, 108, 203.	204, 209	188 190, 207			207,	cities 111, 207
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n-tridecane (149)	×		<u> </u> 	<u> </u>	<u> </u>	 	-			the second statement of the second se	38
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1-chloropropene	×	! }			35
crotonaldehyde				Pittsburgh PA	192
cyanogen chloride	×	×	×	The state of the s	204, 209
cycloheptanone					
	×	×	×	•	20%
1,1-dichloro-2-hexanone		-		Pittsburgh PA	192
2.4-dichlorophenol		ļ.,		Pittsburgh PA	192

car in EPA Water Supply Division Additions as of 3, 15/75

HE NATIONWILE OCCURRENCE OF URGANIC COMPOUNDS IDEPTIFED IN DRINKING WATER Part II: EPA Water Supply Division Additions as of 9, 16/75

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	pun	shenyl acetic acid		3-methyl-2-buta ore	2-methyl propyl nimite	Jimethyl aisulfide	nicotine	methy! 'ormate	mothyl acctate	rethyl ether	Torois	

Footnotes:

a. The data in this reference was obtained during the rest and may not reflect the present occurrence of these pesticities.

Thase compounds are included in the EPA Water Supply Division Listing of Organic Compounds Identified in Drinking Water Supply Division Listing of Organic Compounds Identified in Drinking Water Supply Division Listing of Organic Compounds Identified in Drinking Water Supply

a. Will be dropped from he June 1975 Water Supply Listing & Organic Compounds Identified in Drinking Water.

4 Vertying references were not found in the primary literate. however, this is probably because the data reflect current invosingetive we its.

Reference 20^{3} refers to an initial interim report release J \wedge $^{\circ}$ 17, 1975 by EPA.

LIST A

Albuquerque, NM Annandale, VA Atlanta, GA Baltimore, MD Boston, MA Brownsville, TX Buffalo, NY Camden, AR Cape Girardeau, I

Camaen, AR
Cape Girardeau, MO
Charleston, SC
Chattanooga, TN
Chicago, IL
Clarinda, IA
Cleveland, OH
Clinton, IL
Coalinga, CA
Columbus, OH
Concord, CA
Corvallis, OR
Dallas, TX
Davenport, IA
Dayton, OH
Denver, CO

Greenville, MS Huntington, WV Huron, SD Idaho Falls, ID Ilwaco, WA

Indianapolis, IN

Detroit, MI

Dos Palos, CA

Douglas, AK Grand Forks, ND

Indian Hill Waterworks, OH

Jacksonville, FL
Lawrence, MA
Lincoln, NB
Logansport, LA
Los Angeles, CA
Memphis, TN
Milwaukee, WI
Mt. Clemens, MI

Nashville, TN
Newark, DE
Newport, RI
New York, NY
Oklahoma City, OK
Oshkosh, WI
Owensboro, KY
Passaic Valley, NJ

Phoenix, AZ
Piqua, OH
Pittsburgh, PA
Pueblo, CO
Rhinebeck, NY
Salt Lake City, UT
San Antonio, TX
San Diego, CA
San Juan, PR
Stillwater, OK
St. Louis, MO
St. Paul, MN

Terrebonne Parish, LA

Toms River, NJ Topeka, KS Tucson, AZ Waterbury, CT Wheeling, WV Whiting, IN

Wilmington Sub., DE Youngstown, OH

LIST B

Albuquerque, NM Brownsville, TX Charleston, SC Coalinga, CA Concord, CA Dayton, OH Dos Palos, CA Greenville, MS Huron, SD Lincoln, NB Logansport, LA Newark, DE Newport, RI Oklahoma City, OK Owensboro, KY Phoenix, AZ San Antonio, TX San Diego, CA San Francisco, CA San Juan, PR Stillwater, OK St. Louis, MO Terrebonne Parish, LA Topeka, KS Tucson, AZ Waterbury, CT

LIST C

Albuquerque, NM Annandale, VA Atlanta, GA Baltimore, MD Boston, MA Brownsville, TX Buffalo, NY Camden, AR Cape Girardeau, MO Charleston, SC Chattanooga, TN Chicago, IL Clarinda, IA Cleveland, OH Clinton, IL Coalinga, CA Columbus, OH Concord, CA Corvallis, OR Dallas, TX Davenport, IA Dayton, OH Denver, CO Detroit, MI Dos Palos, CA Douglas, AK Grand Forks, ND Greenville, MS Huntington, WV Huron, SD Idaho Falls, ID Ilwaco, WA Indianapolis, IN Indian Hill Waterworks, OH Jacksonville, FL Lawrence, MA Lincoln, NB Logansport, LA

Los Angeles, CA Memphis, TN Milwaukee, WI Mt. Clemens, MI Nashville, TN Newark, DE Newport, RI New York, NY Oklahoma City, OK Oshkosh, WI Owensboro, KY Passaic Valley, NJ Phoenix, AZ Piqua, OH Pittsburgh, PA Pueblo, CO Rhinebeck, NY Salt Lake City, UT San Antonio, TX San Diego, CA San Francisco, CA San Juan, PR St. Louis, MO St. Paul, MN Strasburg, PA Terrebonne Parish, LA Toms River, NJ Topeka, KS Tucson, AZ Waterbury, CT Wheeling, WV Whiting, IN Wilmington, DE Youngstown, OH unspecified NW Georgia cities

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LIST E

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TECHNICAL REPORT DA A (Please read Instructions on the reverse before completing)								
1 REPORT NO. 2.	3. RECIPIENT'S ACCESSIONNO.							
EPA-560/3-75-002								
4 TITLE AND SUBTITLE	5. REPORT DATE							
	April 1975							
Identification of Organic Compounds in Effluents	6. PERFORMING ORGANIZATION CODE							
From Industrial Sources								
7 AUTHOR(S)	8. PERFORMING ORGANIZATION REPORT NO.							
Ed F. Abrams, D. Derkics, C.V. Fong, D.K. Guinan,								
K.M. Slimak								
9 PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT NO.							
Versar, Inc., General Technologies Division	2LA328							
6621 Electronic Drive,	11. CONTRACT/GRANT NO.							
Springfield, Virginia 22151	Contract No. 68-01-2926							
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1. SPUNSORING AGENCY NAME AND ADDRESS	13. TYPE OF REPORT AND PERIOD COVERED							
Office of Toxic Substances	Final Task 3							
Invironmental Protection Agency	14. SPONSORING AGENCY CODE							
Washington, D.C. 20460								
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15 SUPPLEMENTARY NOTES

16. ABSTRACT

Initial assessment of the possible sources of 154 organic compounds which have been identified in drinking water supplies. List those chemicals which may be formed by chlorination of sewage treatment or water treatment, from leachates is an natural sources, and those which may be from industrial effluents. Appendix as a data sheet for each chemical which shows possible sources, its biodegradability and effective treatment.

KEY WORDS AND DOCUMENT A VALYSIS									
DESCRIPTORS	b.IDENTIF ERS/OPEN ENDED TERMS	c. COSATI Field, Group							
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