EPA bulletin

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Interim Ocean Dumping Rules Set

Interim regulations to control the dumping of wastes into ocean waters have been announced by EPA Administrator William Ruckelshaus and will be published soon in the Federal Register.

The interim regulations provide for the application and issuance of permits prior to promulgation of final regulations by EPA and are required by the Marine Protection, Research, and Sanctuaries Act of 1972 (Public Law 92-532).

The Act takes effect on April 23, six months after its enactment. In anticipation of this deadline the proposed interim regulations for the transportation and dumping of materials in the oceans must be published at an early date to allow both the Regional Offices and potential dischargers sufficient opportunity to apply for and process applications for permits. After April 23, all ocean disposal of waste material without a permit is illegal.

An estimated 1,000 permits are expected to be issued by EPA regional administrators in the seven coastal regions.

Two Exceptions

The EPA permit authority is for transportation and dumping in the ocean of all material, with the exception of dredged spoil and fish wastes. Dredged spoil permits are to be issued by the Corps of Engineers. Corps permits for dredged spoil must meet EPA's criteria for open water disposal and must be disposed of at sites designated by EPA.

A permit is not required for dumping of fish wastes unless these wastes are dumped in harbors or enclosed bays or any location where EPA finds that this dumping could endanger health, the environment, or ecological systems in a specific location.

The regulations will be followed in a short time by criteria under which ocean disposal permit applications will be evaluated for issuance or denial of a permit. These must be published before April 16, 1973, to meet the legislative mandates of Section 403 of the Federal Water Pollution Control Act Amendments of 1972 (P.L 92-500).

The regulations and criteria will be used to operate the program, and public comment will be solicited for necessary revisions before promulgation of final regulations and criteria, expected in August.

No Forms To Fill

There are no forms to fill out for interim dumping applications. The applicant must tell EPA what he wants to dump, where, how, and how much. (see adjoining box for particulars).

Within 10 days after receipt of a completed application, the regional administrator will issue an interim decision, in writing, to the applicant. If this tentative decision is to grant the permit, it must specify the approved dumping site, any special conditions deemed appropriate by EPA, and a time limit.

All interim permits will expire 90 days after the permanent dumping regulations are adopted, if they have not already expired.

The permit program will be administered jointly by EPA headquarters and regional offices. Headquarters will primarily be responsible for the development of regulations and criteria for the administration of the permits. Headquarters will also provide technical assistance to the regions on particularly difficult problems, maintain a national inventory of dumping activities, and compile the reports required by the law. Headquarters

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How to Apply for a Permit

Any waste discharger may apply for an interim ocean dumping permit simply by writing a letter to the regional EPA administrator in his region. This letter must contain at least six items of information:

1. Full identification of the applicant, his location, and the conveyance to be used to transport the waste to the ocean.
2. Full physical and chemical description of the material to be dumped and the quantities to be dumped.
3. A description of the proposed dumping site.
4. A description of the process or activity which produces the waste material.
5. Information of the past activities of the applicant or others in disposing of such waste.
6. A description of available other means of disposal, with explanations of why such other means are considered inappropriate.

The regional administrator, at his discretion, may require additional information from the applicant, and may visit the waste producing facility to determine what additional data are needed to complete the application.

NBS Aids Pollution Measurement

By Robert J. Griffin Jr.
National Bureau of Standards

As the new ambient air quality and automotive emission standards take effect, the ability to measure pollutant levels accurately assumes ever increasing importance. Without accurate and reliable measurements, enforcement actions will be difficult or impossible to sustain in court; unless measurement values obtained in all parts of the country are comparable for given pollutant levels, the law cannot be administered fairly.

To help provide industries, municipalities and regulatory agencies with the means for making accurate air quality measurements, EPA has contracted with the National Bureau of Standards, Department of Commerce, for development of Standard Reference Materials (SRMs) that can be used to help assure accurate measurements for a number of common air pollutants.

The sulfur dioxide permeation tube is calibrated by observing the rate of weight change over time, as SO_2 permeates through the tube. Here, a tube is being weighed on an analytical balance.

Three Requisites

Paul Cali, chief of the Office of Standard Reference Materials, NBS, cites three essential prerequisites for accurate air quality measurements: 1) a rational system of base units (e.g. those now defined by the International System of Units, commonly called the metric system); 2) materials well-characterized with regard to the properties of interest; and 3) reference methods, based in part on SRMs, of proven and demonstrated accuracy.

SRMs consist of materials whose physical or chemical properties are known and that can be compared with an unknown sample, or used to calibrate measurement equipment. For example, a sulfur dioxide (SO_2) permeation tube, developed by EPA, has been evaluated and certified by NBS for the calibration of instruments used to measure the concentration of SO_2 in the atmosphere.

This SRM–which comes in three different sizes to cover several ranges of SO_2 concentration–consists of a plastic tube, capped at each end, containing liquid SO_2. Gaseous SO_2 diffuses through the plastic tube at a rate that is constant at a given temperature. Thus, when it is placed in a stream of air with known flow and volume characteristics, and with the temperature held constant, a known concentration of SO_2 is imparted to the air stream. The air stream can then be directed into the SO_2 measurement device to check its calibration.

Others on the Way

Dr. James R. McNesby, director of the NBS Measures for Air Quality Program, said SRMs are now being developed to calibrate equipment used to measure the following:

- Pollutants in ambient air –nitrogen dioxide, carbon dioxide in nitrogen; carbon monoxide in nitrogen; ozone; and hydrocarbons (as propane).
- Pollutants in automotive emissions–carbon dioxide in nitrogen; propane in air; carbon monoxide in nitrogen; and nitric oxide in nitrogen.
- Pollutants in power plant and industrial stack gases–carbon monoxide; propane; nitric oxide; and sulfur dioxide.

As SRMs for these pollutants become available, and as reference methods are developed and validated, the field test methods used by industry and State and local agencies to monitor pollution levels can be assessed to determine their accuracies. Eventually, it will be possible to maintain and assure the long-term integrity of the measurement system through the use of SRMs in conjunction with accurate field methods.

For additional information on availability of Standard Reference Materials write:

National Bureau of Standards
Washington, D.C. 20234

Chlorination: Bad Effects Studied

When treated waste water is chlorinated before discharge into a stream or lake to kill microorganisms that cause disease or odors, does the chlorine also injure or kill fish and other desirable forms of life in the receiving waters?

This question may be resolved in a multi-faceted study now under way in EPA laboratories in Cincinnati and Duluth and at sewage treatment plants in Wyoming and Grandville, Mich., two small cities near Grand Rapids.

The study is comparing the effects of various disinfection methods on several species of fish and fresh-water invertebrates, using waste water from an activated sludge plant (Grandville) and a trickling filter plant (Wyoming).

Four Different Streams

The fish and other organisms are kept in tanks under closely controlled conditions. Each tank receives a stream of waste water that has been treated differently. chlorination in the usual way; chlorination followed by dechlorination by sulfur dioxide, disinfection by ozone; and an untreated control stream. Comparable work with bromine chloride is also being considered.

Ozone has been used widely for disinfection of drinking water in Europe but rarely in America. Very little is known about the use of ozone for disinfection of wastewater.

$616,000 Grant

EPA is supporting the investigation with a $616,000 grant, and the cities of Wyoming and Grandville are contributing $32,000. Overseeing the work are Cecil W. Chambers, research microbiologist of EPA's Advanced Waste Treatment Laboratory, Cincinnati; Dr. William Brungs, EPA National Water Quality Laboratory, Duluth, Minn ; James A Sheeran and Paul T. Spelman, civil engineers, Wyoming, and Dr. Roland Ward and M DeGraeve, biologists, of Grand Valley State College, Allendale, Mich.

The bioassay work, involving long-term effects on fish reproduction as well as short-term toxicity tests, is being performed by the college biologists, using the most up-to-date procedures provided by EPA's Duluth laboratory

Chambers said the researchers hope to learn which system of treatment will provide adequate disinfection with the lowest toxic effect on the ecology of the receiving waters.

Both the Wyoming and Grandville treatment plants discharge their effluent into the Grand River, which empties into Lake Michigan about 45 miles away.

Chlorine Compound Study

Another environmental aspect of chlorination is being studied at the Duluth branch of the University of Minnesota under an EPA grant

Drs. Robert M Carlson and Ronald Caple, principal investigators, are seeking to isolate and identify the compounds formed when chlorine is added to waters containing certain types of industrial chemical wastes

They have found that biphenyl, a common industrial substance, can combine with excess chlorine in water to form compounds similar to polychlorinated biphenyls, PCBs, that persist in the environment. PCBs are fat-soluble, and are concentrated in the food chain, with possible long-term effects that many biologists fear may be as bad as those of DDT

Interim Regulations Are Set For Ocean Dumping Permits

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would also grant "general permits" for the dumping of small quantities of relatively inert wastes at designated sites.

In keeping with the Agency's policy of decentralization, the regional offices would receive applications for permits for ocean dumping within their regions. The regional administrators would process the application, make necessary administrative, scientific, and technical determinations, determine the length of time for the permit, and issue the permit. Regional offices would also be required to maintain necessary liaison with other Federal agencies field operations involved in ocean dumping within their region.

If an operation affects two regions, it is anticipated that both regional administrators would coordinate the processing of the permit applications.

Waste Dumping Inventory

Information obtained from the permit applications will provide EPA with an inventory of the types, amounts, and qualities of materials disposed of at sea Designated dump sites will be monitored periodically in cooperation with the National Oceanic and Atmospheric Administration and the Coast Guard. This monitoring will provide information on any deterioration in the quality of the environment at the sites so that adjustments may be made in the dumping procedures to effect reduction in these damages In the designation of permanent dump sites, areas with minimal natural resources will be selected to minimize the risks of dumping.

Last Escape Route

Dumping in the ocean has been increasing steadily, and Ruckelshaus thinks it would increase even faster without controls, in response to stricter curbs on waste discharge to the air, fresh waters, and the land.

Ocean dumping is the "last major escape route" to move wastes to another location or medium, rather than to "undertake a responsible effort to treat wastes and improve technology to minimize or eliminate wastes," he said

"The proposed regulations are intended to ensure that all ocean dumping shall be done at designated sites, that toxic materials be strictly controlled, and information obtained (in the permit program) will be used to further abate and prevent pollution of the oceans."

Research Tackles Chemical Spills

By Dr. Joseph P. Lafornara
Edison, N.J., Water Quality Research Laboratory

When you mention spill control, most people think of oil spills, because there are so many of them and they have such a vast potential for environmental damage.

Other hazardous chemicals—sulfuric acid, phenol, acrylonitrile, etc.—are spilled less frequently, but they are also a problem.

Until recently, the attitude to such spills has been: "There is very little that can be done, except to evacuate the area and warn downstream communities." There has been no adequate technology to contain, control, and remove such spills.

EPA's Office of Research and Monitoring has initiated several intensive research programs to try to narrow these gaps in technology, working through the Edison Water Quality Research Laboratory, a branch of the National Environmental Research Center in Cincinnati.

Since many chemical spills occur on land and then run into a watercourse, it was considered necessary to seek methods of containing the flow to prevent the contamination of nearby streams or ground water. EPA therefore awarded research contracts to three corporations to investigate various aspects of the containment problem.

Fig. 1. Technician applies quick-setting foam plug to stop this benzene leak.

Fast-Acting Plugs

It is apparent that the best way to contain a spill is to stop flow from the leaking container. North American Rockwell Corp.'s Rocketdyne Division is working on quick-setting, foamed-in-place plugs to stop such leaks. They have demonstrated the feasibility of these materials to stop leaks and ruptures in a wide variety of containers and under a broad range of circumstances, even under water.

Figure 1 shows a technician applying a foam plug to a leaking 55-gallon container of benzene. Rocketdyne is in the process of perfecting an applicator for the plug, and an operational system should be available with the next few years.

Fig. 2. Plastic dam has been used to seal off this simulated stormwater drain.

Plastic Dams

In cases where it is not possible to plug a leak, or where the material has already been spilled from a truck, tank car, or in-plant facility, it is desirable to prevent the spill from flowing into a watercourse. MSA Research Corp. has demonstrated the feasibility of using foamed-in-place plastic dams to stop the flow of spilled hazardous materials.

Figure 2 shows a test storm drain that has been dammed up to prevent a spill from reaching the storm sewer and its receiving waters. Other tests have shown these dams to be effective in containing spills on open terrain. Once a spill is confined, the material can be vacuum-pumped into a proper container for treatment or disposal.

Gelling the Spill

However, a contained spill can still contaminate ground water through percolation through the soil. To prevent this, CALSPAN Corp. has been working on methods for quickly gelling hazardous liquids. Using a blend of commercially available poly-

Fig. 3. Gel solidifies spilled chemical in ditch.

Fig. 4. Mobile reactor treats spills on the spot.

meric materials, CALSPAN has successfully gelled a variety of liquids, both water-soluble and water-insoluble. The polymers convert the liquid into a thick, jelly-like mass that will not soak into the ground.

Figure 3 shows a blended polymer gel being used to immobolize a cyclohexane spill. The company is now working on optimizing the gel formulation and developing a rapid dispenser for it.

Treatment Methods

For spills that have already contaminated water bodies, mobile treatment units are being developed for EPA by Rex Chainbelt, Inc., and Industrial Bio-Test Laboratories, Inc., for use on small watercourses where confinement of the spill to a small area is possible.

Rex Chainbelt has designed, built, and tested a trailer-mounted physical-chemical treatment unit that can handle 200 gallons per minute, shown in Figure 4. It consists of three large columns containing activated carbon, three smaller multimedia filters, and several tanks for sedimentation, chemical reactions, and storage.

Industrial Bio-Test has demonstrated on a smaller scale (10 to 15 gpm) a very fast-acting system for physical and chemical treatment. After pumps suck up the spilled liquids, they are highly pressurized before they undergo the appropriate processing: aeration, mixing with precipitating or flocculating agents, reactant chemicals, or combinations of these. This "dynamic chemical reactor" has been successfully coupled with a magnetic separator, and the company plans to scale it up to a 250 gpm capacity.

Large-Scale Treatment

In cases where the spill cannot be confined to a small area, in-place treatment is necessary. Battelle Memorial Institute's Pacific Northwest Laboratories, under EPA sponsorship, has demonstrated the use of floatable mass-transfer media (carbon, ion exchange resins, etc.) to remove soluble hazardous materials from a contaminated lagoon. The media are introduced to the bottom of the waterbody in weighted containers which can be dropped from a helicopter or other aircraft, as shown in Figure 5.

Fig. 5. Dropped containers release treatment media from pond bottom.

The media are then slowly released from the containers upward through the water column, where they decontaminate the pollutant while bringing it to the water surface where it can be gathered and removed by conventional oil-skimming devices.

These methods and devices are but a few examples of EPA's current research efforts to contain and treat hazardous chemical spills. All are in the experimental stages; none can yet be regarded as fully proved and operational.

Other, related projects under way include: activated carbon "tea bags" for in-stream treatment; field detection kits; fixed-station spill alarm systems; in-stream systems for accelerating biological treatment; "sea curtain" booms, like those used for oil spills, to confine hazardous materials in a waterbody; and specific methods and instructions for disposing of spilled or unused pesticides.

With these new tools and techniques, we expect that industries and government agencies will soon be in a more favorable position to cope with chemical spill problems.

Lake Ontario Survey Nearly Ended

A year-long survey of Lake Ontario is winding up this month on the Canadian research vessel *Limnos,* undeterred by the low temperatures and high winds of a record winter.

The *Limnos* cruises are part of the International Field Year for the Great Lakes (IFGYL), a joint project of the U. S. and Canada involving dozens of official agencies in both nations and more than 600 scientists and technicians.

Scientists working on the project pronounce the acronym "Eye-feagle," and call it the "endangered international bird."

Object of IFGYL is to provide sound scientific data for halting pollution in the Great Lakes and managing their vast water resources. The five lakes together contain more than 5,000 cubic miles of water, or about 20 percent of all the liquid fresh water in the world.

Lake Ontario and its 30,000-square--mile drainage basin was chosen last year for intensive study. Throughout last summer and fall, the survey ship *Researcher,* one of a fleet of vessels belonging to the National Oceanic and Atmospheric Administration of the Department of Commerce, cruised the lake to gather data on its waters, currents, and biology. When winter came, the *Limnos,* based at Burlington, Ont., took over.

Technicians prepare to lower sampling package into Lake Ontario's waters.

Canadian research vessel Limnos is cruising on Lake Ontario to gather scientific information for International Field Year for the Great Lakes.

In addition to the cruising vessels, aircraft, weather stations, a network of towers and buoys, and even satellite instruments are involved in the data gathering program

Nearly equal resources are being used for IFGYL from both sides of the border. The Canadian program is directed by the Center for Inland Waters at Burlington, and the U. S. program, led by NOAA, includes personnel from EPA, the National Science Foundation, and the Departments of Interior, Transportation, and Defense.

EPA's Grosse Ile, Mich., laboratory, headed by Dr. Tudor Davies, has been active in planning the sampling activities and experiments undertaken the the cruise ships. Al Baldwin of EPA's Region II laboratory at Rochester has represented the Agency on the *Limnos's* winter cruises. Students from the University of Michigan, Ann Arbor, and the State University of New York, Albany, have been working as technicians on the vessel.

The data collection phase of IFGYL is scheduled to end this spring. Data reduction and analysis are expected to take another year, and the publication of final reports and recommendations will begin in 1974.

Two data banks are being established, one for each country, but with joint access to each by scientists of the other country.

The IFGYL scientists hope to describe, more accurately and completely than ever before, the condition of Lake Ontario, what goes into it, what happens in it, and what comes out. They plan to create computer models of the changes taking place in the lake waters from season to season and year to year, models that will permit reliable predictions of how the lake will respond to environmental changes in the Ontario basin.

One benefit of the study is expected to be better management of the lake's water level, which affects hydroelectric power generation, navigation, and shore erosion.

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Spur to EPA Enforcement: People Want to Do Right

Enforcement of environmental regulations is becoming easier because "most people want to do the right thing," according to Arthur W. Busch, EPA Region VI administrator at Dallas.

Polluting industries are finding that "if they will meet us halfway, we're not going to take them to court," Busch said recently in a statement issued at the end of his first year with the Agency.

The former professor of environmental engineering at Rice University credited strong public support for pollution control with helping to "create a climate" that often makes lawsuits unnecessary.

Another factor in this "climate," he said is technical expertise. EPA's technical specialists have won the respect of both sides—polluting industries and environmentalists—with the result that their knowledge carries weight with jurists and the public too.

"When we have to take a case to court, we prepare the very best information available so that a court can rule properly on the allegations we make," said Busch.

He cited two recent court cases reflecting improved relations and understanding between EPA and companies which have pollution problems.

In an injunction action brought by EPA under the 1899 Refuse Act, Federal District Judge John V. Singleton ruled in January that the Rohm and Haas Co. must limit its discharge of certain pollutants into the Houston Ship Channel.

Judge Singleton's decision cited the company's own "extensive research and investigations. . . to reduce its discharge of harmful effluents. However, during the course of this trial, experts representing both the Government (EPA) and Rohm and Haas gave testimony in detail relating to measurement standards in an attempt to aid this court in constructing a workable timetable and to establish such standards."

The judge's order requires the company to reduce its ammonia discharge from an estimated 10,000 pounds per day to 7,500 lbs./day by April 1, and to 400 lbs /day by the end of 1974. Chemical oxygen demand of the company's effluent, now estimated at 25,000 lbs./day, must be cut to 6,400 lbs./day by July 1 and to no more than 2,700 lbs./day at the end of next year.

In another case cited by Busch, the Houston Lighting and Power Co. agreed to forego construction of three new generating units at its Cedar Bayou plant to protect the ecology of Trinity Bay. The agreement was part of a consent judgement settling a suit filed by the Department of Justice last March.

"Legal action is sometimes the best way, if not the only way, to resolve complex cases involving air and water pollution," said Busch. "Where we have to bring a lawsuit, it is gratifying to see an increasing atmosphere of cooperation on the part of all concerned."

GOVT. - INDUSTRY CONFERENCE SET ON OIL SPILLS

A Government-industry conference on the prevention and control of oil spills will be held on March 13-15 at the Sheraton-Park Hotel in Washington, D.C.

The three-day session is sponsored jointly by EPA, the U S. Coast Guard, and the American Petroleum Institute, trade organization of the oil industry

The technical sessions will review the best current practices in preventing spills at exploratory and producing wells, refineries, pipelines, and terminals and the best current methods of cleaning up spills after they occur. Other sessions will deal with the "fate and effects" of spilled oil, including the identification of spill sources and the impact of spills on land and water ecologies

The heads of the sponsoring agencies are scheduled to address three general luncheon sessions.

Officials and Public Invited To Help Set Noise Limits

State and local environmental officials and all interested citizens have been invited to help EPA develop regulations to limit noise from interstate motor carriers and railroads.

Noise standards for these carriers must be formally proposed by the Agency before July 27, under the Noise Control Act of 1972

Public comments are being sought this month on methods of identifying and measuring such noise and on suggested techniques to reduce it

Under the Noise Control Act, EPA must propose noise standards for both types of interstate carriers. In the case of railroads, the standards must limit noise from the operation of rail yards and terminal equipment; for motor carriers the standards need only limit operational noise

The proposed standards will apply to both new and old equipment, and they must reflect the degree of noise reduction that can be achieved with the "best available technology, taking into account the cost of compliance," according to the Act.

EPA is especially interested in public suggestions on

- Industry and government regulations and standards that might affect, or be affected by, noise regulation.
- Demonstrable noise abatement and control techniques, and their effectiveness
- Major sources of interstate rail and motor carrier noise and data on the levels of noise they produce.
- Cost data on abatement and control methods

Persons wishing to submit information during the rule-making process should send two copies of their written comments to the Office of Noise Abatement and Control, EPA, Washington, D.C , 20460, by April 2.

Hearings On Gas Rationing

Nine public hearings will be held this month in Los Angeles and nearby cities on EPA proposals to reduce air pollution there by gasoline rationing and other restrictions on motor vehicles.

The hearings are expected to attract record crowds because of the drastic and controversial nature of the proposals.

Likely to be discussed the most is the plan to ration gasoline in the Los Angeles area during the smog season from May to October to cut gasoline usage as much as 82 percent.

This is the only way now conceivable for the area to achieve ambient air that meets the national standard for photochemical oxidants by the 1977 deadline set by the Clean Air Act, according to EPA Administrator William Ruckelshaus.

Other control measures proposed by Ruckelshaus Jan. 15 included strict annual inspections for all motor vehicles' exhaust emissions, mandatory installation of control devices on old vehicles, conversion of fleet cars and trucks to natural gas or other low-polluting fuel, and additional controls on gasoline stations and dry cleaning establishments.

The first hearing was held at Parker Center Auditorium in Los Angeles March 5 Other places and times are Riverside, March 8, Long Beach, March 10, Van Nuys, March 12, Pomona, March 13; San Bernardino, March 15, and Santa Barbara, March 19.

The hearings will be conducted by EPA officials from Washington, with Alan G. Kirk, deputy general counsel, presiding. Representatives of the Air Programs Office and the Office of Research and Monitoring will be panelists at each session. Deputy Administrator Robert W. Fri will attend the first hearing.

Persons interested in testifying or submitting statements should contact EPA's Region IX office in San Francisco, submitting four copies of proposed remarks seven days before the hearing date.

The detailed proposals are available for public inspection at most public libraries in the Los Angeles area. Records will be kept of each hearing, including stenographic transcripts of questions and answers, and these records will also be made available to the public.

Lab Safety Note:

ORGANIC SOLVENTS CAN BE DEADLY!

Most State and local environmental laboratories routinely use organic solvents that are highly flammable, even explosive.

Stringent standards for the handling of these liquids are imposed by the Occupational Safety and Health Act of 1970, according to Trenton Crow, chief of EPA's Safety Management Branch.

In brief, the standards require that flammable solvents be kept in and poured from vented safety cans and that the cans be stored in properly designed cabinets.

Handling of solvents in glass bottles imposes a severe fire hazard to laboratory workers and should be discouraged, Crow said.

Glass-lined safety cans with spring-closing lids and spout covers—which open to relieve internal pressure in the event of exposure to heat—are now commercially available.

Detailed standards under the Federal law are listed in the Federal Register for Oct. 18, 1972, vol. 32, no. 202, part II, on page 22170 (for safety can design) and pages 22177-80 (for storage requirements).

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