SUBCHAPTER D—WATER PROGRAMS

PART 129—TOXIC POLLUTANT EFFLUENT STANDARDS

List of Toxic Pollutants

On July 6, 1973, notice was published in the FEDERAL REGISTER (38 FR 18044) that the Environmental Protection Agency was proposing a list of toxic pollutants pursuant to section 307(a)(1) of the Federal Water Pollution Control Act, as amended (33 U.S.C.A. section 1317(a) Supp 1973), (the Act) which provides in part:

> The Administrator shall, within ninety days after the date of enactment of this title, publish (and from time to time thereafter revise) a list which includes any toxic pollutant or combination of such pollutants for which an effluent standard (which may include a prohibition of the discharge of such pollutants or combination of such pollutants) will be established under this section.

That proposed list included aldrin-dieldrin, benzidine, cadmium, cyanide, DDT (DDE, DDD), endrin, mercury, polychlorinated biphenyls, and toxaphene.

Written comments on the proposed rulemaking were invited and received from interested parties and are on file with the Agency. All comments have been considered by the Environmental Protection Agency and certain ones have been adopted. These and other principal changes are discussed below.

Several comments dealt with the manner in which the inorganic components of the list were specified and argued that certain insoluble or innocuous forms of these substances should not be included in broad categories such as "all cadmium compounds." Effluent standards which must be developed for the listed pollutants will include analytical and sampling procedures which will distinguish between the toxic and innocuous forms of the designated pollutants.

A number of commenters expressed the opinion that the proposed selection criteria were vague and inadequate. It was obvious from the comments received that a great deal of confusion existed as to what materials could potentially be selected as toxic pollutants.

Accordingly, EPA has refined these criteria to make them more specific. These criteria entail two major advantages. First, they will provide for more informed public participation, by identifying the kinds of pollutants which the Agency proposes to examine and the types of data which are sought for each pollutant. Second, dischargers will be placed on notice concerning the class of pollutants which may become subject to standards under Section 307(a).

It is our intent that the process of selecting pollutants for the list of toxic pollutants will be a continuing one; as additional evidence is developed, additional pollutants will be added to the list.

Pollutants were chosen for inclusion on the initial list in light of the following criteria:

1. Data from laboratory or field studies indicate that the pollutant could, if discharged into water, constitute a serious environmental threat. The types of data examined in making this judgment are set forth in Part I below.

2. The pollutant is discharged, or has the potential to be discharged, from point sources and constitutes a very serious environmental threat.

3. Data are available to establish effluent standards meeting the requirements of the Act.

4. Standard setting under Section 307 (a) is appropriate, and is necessary because the prospective timing and effectiveness of abatement actions under other provisions of the Act are not commensurate with the nature and seriousness of the problems identified by the above criteria.

I. EXPLANATION OF CRITERIA

The first criterion concerns the actual or potential damage that a water discharge of these materials may create by virtue of certain toxicological properties.

Detailed toxicological data are examined to determine whether one or more of these types of effects are known: bioaccumulation, carcinogenic, mutagenic and teratogenic effects, and high acute toxicity. Specifically, the following types of data are reviewed:

1. Available data concerning whether a substance or its chemical or biological transformation product is bioaccumulated through an aquatic mechanism to the extent that they result in:

(a) Reproductive impairment in any important species, or

(b) Concentrations in food sources in excess of applicable Federally established tolerance levels.

2. Data concerning carcinogenic, mutagenic, and teratogenic effects. Materials likely to be carcinogenic, mutagenic, or teratogenic to man are further evaluated as to their chemical, biological, and physical stability in water.

3. Data concerning high order of toxicity as measured by short-term lethality tests. In this connection a classification of a substance as "highly toxic" to man according to classifications established by the Department of Transportation and the Environmental Protection Agency (36 FR 2934, February 12, 1971, 40 CFR 162.8) and the Environmental Protection Agency and the Food and Drug Administration testing procedures (40 CFR 162.8 and 21 CFR 191.10) is particularly relevant. According to the references cited above, substances which have an oral LD50 of 50 mg/kg of body weight or less or have a dermal LD50 of 200 mg/kg of body

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weight of less are defined as highly toxic to mammals and are examined further. The term "oral LD50" means that single oral dose which is lethal to one-half of the test population within 14 days. The term "dermal LD50" means that dose dermally absorbed in 24 hours which is lethal to one-half of the test population within 14 days.

For the protection of aquatic life, substances proposed to be classified as "highly toxic" according to the National Academy of Sciences water pollution ranking system may be considered for inclusion in the list. Such substances are those which are toxic to aquatic life as measured by a 96 hour LC50 of 10 mg/l or less. The term "LC50" means that concentration of a substance in water which is lethal to one-half of the test population in the specified time periods. Testing methods such as those found in "Standard Methods for the Examination of Water and Wastewater," 13th Edition, part 231, 1971, or their equivalent will be considered adequate.

The second criterion concerns the seriousness of discharges or potential discharges of the pollutant from point sources. Relevant here are such factors as the nature and extent of toxic effects associated with the pollutant, the extent to which discharges of the pollutant have been identified, and the production, distribution, and use pattern of the pollutant. Data must be available from well documented field studies showing damage to important organisms from discharges of the compound into waters, or technically sufficient to show the material has the potential to be environmentally harmful after being discharged from point sources to the water.

The third criterion concerns setting effluent standards for pollutants on the list. The following are representative of the categories of data useful in standard setting for each material.

1. Toxicity to man and other organisms;
2. Carcinogenicity, mutagenicity, and teratogenicity data;
3. Transport paths of the material in the environment;
4. Bioaccumulation and bioconcentration;
5. Chemical, physical, and biological transformations in the environment;
6. Reliability and accuracy of analytical procedures;
7. Chemical characteristics;
8. Production and industrial or commercial utilization;
9. Sources of the pollutant to water;
10. Environmental incidents attributable to the material (fish kills, etc.);
11. Presence of the material in the environment, residue levels in various organisms, ambient concentrations in rivers, lakes, etc.;
12. State and Federal regulatory requirements concerning the material;
13. Classes and characteristics of waters into which the material is discharged.

The fourth criterion concerns the overall environmental effect of the control measures available, including the use of substitute products, and possible effects upon ground water or other environmental media.

II. The Pollutants Selected

The emergency standards promulgated by the Department of Labor for occupational carcinogens (38 FR 10929, May 3, 1973), have forced a shift in the manufacture of benzidine from the previous producers to the end users. The resulting potential for increased water pollution by this known carcinogen and the adverse effects on the environment which may result, require the listing of benzidine. Public comments have indicated that the material should be included, and that discharges should be severely controlled. Other public comments indicated that the material does not meet the selection criteria as proposed July 6, 1973. Benzidine does meet the criteria set forth herein. It was also asserted that the DOL standards would protect both the work place and the environment. However, those standards are designed to prevent occupational exposure, not to control discharges into water.

Mercury is on the list because its organic form is known to bioaccumulate to the extent that it poses a threat to the health of man through concentration in food sources, so as to exceed applicable tolerance levels. Control of point source discharges is urgently needed, and available data are sufficient for standard setting. Public comments noted that the discharge of this material should be severely restricted. Some comments were received recommending deletion of the material from the list because of questions of solubility and demethylation of mercury and its compounds. It should be noted, however, that all forms of mercury in the aquatic environment can be methylated to methylmercury, the most hazardous form.

Aldrin-dieldrin are on the list because of their high order of toxicity to aquatic organisms and their bioaccumulative properties. Control is necessary now and there are adequate data to support effluent standards. Some comments indicated that aldrin-dieldrin should be deleted because of possible conflict with on-going cancellation proceedings under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The Administrator has an obligation to control toxic pollutants under FWPCA which is independent of his authority under FIFRA. These responsibilities cannot be abdicated. Moreover, it is too early to ascertain the precise determinations which will be required under the FWPCA, and the impact on the FIFRA proceedings. Accordingly, deletion of aldrin-dieldrin is not considered to be warranted at this time.

Cadmium is included on the list because of toxicity to aquatic organisms. From our studies, it was determined that there are several hundred dischargers of cadmium, and controls are urgently needed. Public comment supported the inclusion of this material because of its high order of toxicity to aquatic organisms, potential concentrations in the food web, and its widespread discharge.

Some commenters objected to the inclusion of "Cadmium and all cadmium compounds" on the list because some relatively innocuous forms of the element would be included. The final effluent standards will distinguish among the various forms in which the element may occur.

DDT, DDD, and DDE are on the list because of their acute toxicity to aquatic organisms, and their bioaccumulative properties, which are known to cause harmful effects in higher life forms, such as birds. The data are sufficient for the establishment of effluent standards. Public response in favor of inclusion of DDT, DDD, and DDE noted the existence of much data on the harmful effects of these materials. One commenter stated that DDD degrades rapidly, and does not have many of the effects associated with DDT. It was determined, however, that DDD should also be included because of its toxicity and bioaccumulative properties.

Endrin is highly toxic to aquatic life at low concentrations. Considerable data are available on endrin, and control of point sources is necessary at present. Those public comments that supported its inclusion cited considerable data, and urged stringent control. One commenter alleged that the sole manufacturing facility is under control, and that further restriction is unnecessary and redundant. However, available technical and scientific data support inclusion. Moreover, the manufacturer of the material is not the only point source, since formulators also contribute endrin contaminated wastes to the environment.

Polychlorinated biphenyls are on the list because of their high order of toxicity to man and aquatic organisms, and because of their bioaccumulative potential. The data are adequate, and the point source discharges require prompt control. Public comments indicated that the materials should be included because of their widespread use, and their demonstrated harm to aquatic life. These commenters urged that discharges be as low as possible. No comments were received recommending deletion of polychlorinated biphenyls.

Toxaphene is on the list because of its high order of toxicity to aquatic life. Considerable data are available concerning this compound, and prompt control of known point sources is required. Public comments in support of the material being included cited much of the available toxicity data. Some commenters argued that this material did not meet the selection criteria published in connection with the proposed list of July 6, 1973. Toxaphene does meet the criteria set forth in this notice.

Since toxaphene has infrequently been reported to be present in the environment, some commenters urged its deletion. However, controls are necessary because the material continues to be manufactured, formulated, and distrib-

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uted in large quantities. Thus, the potential for harmful discharges is considerable.

Cyanide is on the list because of its high order of toxicity to aquatic life. There are many different types of point source discharges and a variety of receiving bodies of water which must be protected from the discharge of this material. The data are adequate to support effluent standards. The public commenters in favor of inclusion cited data on toxicity to aquatic life in very low concentrations. Those commenters who recommended deletion for the most part objected to inclusion of "all cyanide compounds." It was argued that only compounds which dissociate in water to form toxic concentrations of cyanide ion or hydrogen cyanide should be included. The proposed effluent standards will take these comments into account, and may specify special sampling, analysis, and reporting requirements.

III. THE LENGTH OF THE LIST

Several commenters recommended that the final list include a larger number of pollutants than were included on the proposed list. In addition, a number of commenters requested shortening the list. Most of the latter recommended removal of specific pollutants; these recommendations have been discussed in the preceding section.

As required by section 515 of the Act, EPA notified the Effluent Standards and Water Quality Information Advisory Committee on June 6, 1973, of our intention to propose effluent standards for toxic pollutants under section 307(a). The Committee held hearings on the proposed list in Washington, D.C. (July 10), Chicago, Ill. (July 30), New York, N.Y. (August 1), and San Francisco, Calif. (August 9). The Committee has agreed to provide scientific and technical information concerning the listed pollutants, but has made no recommendations to date concerning the length of the list.

Pursuant to the consent decree entered into by EPA in the case of *NRDC v. Fri*, Civ. Action No. 848-73 (D.D.C.), EPA must publish proposed standards for all pollutants included on this initial list no later than December 3, 1973.

Additional toxic pollutants lists may be published in the future under section 307(a). The Agency will examine a wide range of pollutants in constituting such lists. Among those which will be examined are the following pollutants which were identified in public comments on the initial list:

arsenic	ortho-chlorophenol
selenium	beta-naphthol
chromium	alpha-naphthol
lead	beryllium
asbestos	nickel
sevin	antimony
zinc	heptachlor
chlordane	camphor
lindane	methyl parathion
aeridine	parathion
hydroquinone	di-n-butyl phthalate

The Agency will examine other pollutants in addition, including chlorinated hydrocarbons, organophosphates, heavy metals, and materials listed as occupational carcinogens by the Department of Labor (38 FR 10929, May 3, 1973).

Persons interested in assisting the Environmental Protection Agency in setting standards for the pollutants listed in Section IV are invited to submit scientific and technical data, and other information concerning the listed pollutants, to Dr. C. Hugh Thompson, Chairman, Hazardous and Toxic Substance Regulation Task Force, Office of Water Program Operations, Environmental Protection Agency, Washington, D.C. 20460. In particular, the thirteen categories of standard-setting data set forth in Section I above are sought for all pollutants listed in Section IV. The Agency is also interested in obtaining data on technology for waste control treatment and disposal of the pollutants listed in Section IV.

In addition, the Agency will review any data submitted on pollutants proposed to be placed on future lists. The pollutants listed above are merely representative of pollutants identified in public comment which may be candidates for selection. Data on those pollutants, and on other pollutants which may be candidates for selection, should be submitted to the Chairman, Hazardous and Toxic Substance Regulation Task Force, at the address set forth in the preceding paragraph.

Dated August 31, 1973.

JOHN QUARLES,
Acting Administrator.

IV. THE LIST OF TOXIC POLLUTANTS

Pursuant to section 307(a) of the Federal Water Pollution Control Act, as amended, effluent standards will be established for the pollutants listed below:

1. Aldrin (1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-1,4,5,8 endo-exodimethanonaphthalene).
   Dieldrin (1,2,3,4,10,10-hexachloro 6,7-epoxy - 1,4,4a,5,6,7,8,8a - octahydro - 1,4 - endo,exo-5,8-dimethanonaphthalene).
2. Benzidine and its salts (para-para'-diaminobiphenyl).
3. Cadmium and all cadmium compounds.
4. Cyanide and all cyanide compounds.
5. DDD (TDE) 1,1 - dichloro - 2,2 - bis(para-chlorophenyl) -ethane.
   DDE(dichlorodiphenyldichloroethylene) 1, 1 - dichloro-2,2 - bis(para-chlorophenyl) ethylene.
   DDT(dichlorodiphenyltrichloroethane)1,1, 1 - trichloro-2,2-bis(para-chlorophenyl) ethane.
6. Endrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a - octahydro - 1,4 - endo - endo-5,8-dimethanonaphthalene).
7. Mecury and all mercury compounds.
8. Polychlorinated biphenyls (PCB's).
9. Toxaphene (chlorinated camphene).

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