ben a tion will treat PCB containing oil down to the 1 μg/l level. The presence of other chlorinated organic compounds is not believed to be a major problem in the control of effluent from capacitor manufacturers. In any event, boiler 1 processes can be utilized to reduce levels of such other compounds prior to carbon adsorption treatments. By increasing the mass of carbon in the system, effluents with increased degrees of chlorination are capable of being treated.

The Agency's contractors considered liquid-liquid extraction using oils during the course of its study of treatment technologies for PCB-containing effluents. However, their study was not intended to be an exhaustive listing of potential treatment alternatives. Rather their purpose was to show that particular technologies were available. Because no laboratory or pilot data were available on oil extraction technology, it was not deemed fruitful to explore a hypothetical process. Furthermore, the partition coefficient for oils is much higher than that for carbon, potentially resulting in greater cost and disposal problems.

The Agency arrived at its cost figures based on the most current information available from suppliers of treatment systems. It therefore believes that its cost estimates were reasonable.

The disposal problem associated with PCBs was raised by other comments as well as by General Motors and was addressed more fully above. As noted previously, the Agency is required under TOSCA to study this issue but it is not a relevant concern in the context of these proceedings.

(18) Comments were received from both Westgate Research and Houston Research disagreeing with the Agency's conclusions with respect to the feasibility of ultraviolet-assisted ozonation as a PCB treatment technology.

The Agency has re-evaluated its technical basis for UV-ozonation, in light of the present comments as well as the affidavit and testimony of a UV-ozonation equipment manufacturer (Houston Research) who furnished additional technical and cost information which is now in the hearing record. The Agency believes that the performance capability of UV-ozonation is now well documented in the record in this proceeding.

(19) Dow Chemical urged the Agency to revise its definition of PCBs to exclude chlorinated biphenyls "that have functional groups attached other than chlorine unless that functional group * * * is determined to be dangerous to the public health, safety and welfare * * *."

The Agency's definition of PCBs is "a mixture of compounds composed of the biphenyl molecule which has been chlorinated to varying degrees." The biphenyl molecule has a total of ten carbon-hydrogen bonds at which chlorine substitution is possible. The exclusion suggested by Dow is determined by the Agency to be unnecessary and inappropriate.

IV. Conclusions

1. The toxic pollutant effluent standards proposed by the Agency for PCBs (§ 129.105) by publication in the Federal Register on July 23, 1976, 41 FR 30468 et seq., together with the Agency's supporting statement of basis and purpose, embody a careful and thorough consideration of the toxicity of PCBs, their persistence, degradability, the usual or potential presence of affected organisms in any waters, the importance of the affected organisms, and the nature and extent of the effect of PCBs on such organisms, as required by section 307(a) of the Act. The evidence presented at the rulemaking hearings by the Agency and also by the various objecting parties expanded upon and added to the extensive data base which was set forth by the Agency in its statement of basis and purpose.

2. The Findings set forth above are based upon substantial evidence in the record concerning the extraordinary toxicity, persistence, and mobility, the low degradability, and the severe bioaccumulation properties of PCBs, as well as their serious human health implications. When the Agency issued its proposed standards for PCBs on July 23, 1976, it stated in connection with the ambient water criterion that it was "virtually impossible to state with confidence that any number above zero provided an ample margin of safety for man" (41 FR 30470). Additional evidence introduced at the hearing confirmed the soundness of that reservation, and the seriousness of the PCBs problem. This included substantiation of earlier preliminary evidence that PCBs may bioaccumulate in the field at substantially higher rates than those experienced in laboratory tests upon which the Agency placed primary reliance in developing its proposed standards, additional evidence of the hazards of low-level exposure to PCBs to a wide range of organisms, and additional evidence of carcinogenicity.

3. Evidence presented at the hearings also showed that the impact of a prohibition of PCBs on the industries in question would be no greater than the impact of the effluent standards proposed by the Agency on July 23, 1976. As discussed in the Findings above, this alters the picture from that which confronted the Agency at the time of proposal, when it appeared that the incremental impact of a prohibition on discharge of PCBs by transformer and capacitor manufacturers would have a far more adverse economic effect than standards at the levels proposed. As set forth in the Findings, the reasons for the concern I expressed in the preamble to the proposed standards regarding such incremental impact (which led the Agency to not propose a prohibition at that time on PCBs in the discharges from capacitor and transformer manufacturers (41 FR 30474-30475)) have largely ceased to exist.

4. Based upon a preponderance of the evidence on the record adduced at the hearings, as discussed in the preceding Findings, I have concluded that the toxic pollutant effluent standards as originally proposed should be modified so as to establish a prohibition on PCBs in any discharge by any manufacturer of PCBs or any electrical transformer or electrical capacitor manufacturer, in order to provide an ample margin of safety for the protection of aquatic and other organisms and consumers thereof, including humans, who may be affected by discharges from such manufacturers.

5. In addition, for the reasons set forth in the preceding Findings, I have concluded that because of the extraordinary persistence and mobility of PCBs which often results in the presence of PCBs in intake water supplies, the proposed standards should be modified so as to include a new § 129.105(e) which would allow, for PCBs only, a credit for pollutants in the intake waters where the source of those intake waters is other than the waterbody to which the effluent is discharged, so long as the PCB concentration in such intake waters does not exceed and thereby degrade that of the receiving waters. Such a credit is already available where the source of the intake water is the same as the receiving waterbody, under 40 CFR 129.6 (the general implementing regulations, promulgated on January 12, 1977, 42 FR 2588, 2614).

6. In subsections (b) (1) (i), (c) (1) (i), and (d) (1) (i) of § 129.105 as proposed, there was the following language setting forth the application of the standards to stormwater and other runoff:

> These standards or prohibitions apply to:
>
> * * * * *
>
> (B) All discharges from the manufacturing areas, loading and unloading areas, storage areas and other areas which are subject to direct contamination by PCBs as a result of the manufacturing process, including but not limited to: (1) stormwater and other runoff;

Subsection (ii) of each of those sections then provided as follows:

> These standards do not apply to stormwater runoff or other discharges from areas subject to contamination solely by fallout from air emissions of PCBs; or to stormwater runoff that exceeds that from the ten year 24-hour rainfall event.

For clarification, each of the subsections first mentioned above should be modified by inserting after the words "stormwater and other runoff" the following language: "except as hereinafter provided in subsection (ii)."

7. The toxic pollutant effluent standards proposed by the Agency for PCBs, with the foregoing modifications, are fully supported by substantial evidence on the record as a whole. No further modification of such standards is justified "based upon a preponderance of evidence" adduced at the hearings within the meaning of section 307(a)(2) of the Act, and accordingly the standards, with the foregoing modifications, should be promulgated.

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8. Under section 307(a)(6) of the Act, t pollutant effluent standards are to l plied with "in no case more than one year from the date of such promulgation." Although I have the authority under that section to require compliance with these standards in a shorter period of time, it is my conclusion that the full statutory period should be allowed to enable plants to either phase out their use of PCBs, convert to substitutes, make appropriate technological or process changes, or take such other steps as they may decide upon in order to achieve compliance.

9. It is my further conclusion, based upon the Findings set forth above and the evidence of record, that the standards as thus promulgated fully satisfy the requirements of section 307(a) of the Act, that compliance therewith is achievable within the prescribed time frame, and that the standards which are promulgated at this time are not likely to cause serious adverse economic impact to the Nation or to the industries which are subject to their provisions.

Effective date: The amendment as hereinafter promulgated will become effective February 2, 1977. Due to the operation of § 129.8, the compliance date for the standards promulgated below will be February 2, 1978.

Dated: January 18, 1977.

RUSSELL E. TRAIN,
Administrator.

1. In 40 CFR Part 129, Subpart A (as promulgated at 42 FR 2588 et seq. January 12, 1977, and amended at 42 FR 2617 et seq. January 12, 1977), the table of contents is further amended to read as follows:

Subpart A—Toxic Pollutant Effluent Standards and Prohibitions

Sec.
129.1 Scope and purpose.
129.2 Definitions.
129.3 Abbreviations.
129.4 Toxic pollutants.
129.5 Compliance.
129.6 Adjustment of effluent standard for presence of toxic pollutant in the intake water.
129.7 Requirement and procedure for establishing a more stringent effluent limitation.
129.8 Compliance date.
129.9-129.99 [Reserved]
129.100 Aldrin/dieldrin.
129.101 DDT, DDD and DDE.
129.102 Endrin.
129.103 Toxaphene.
129.104 Benzidine.
129.105 Polychlorinated Biphenyls (PCBs).

AUTHORITY: Sec. 307, 308, 501, Federal Water Pollution Control Act Amendments of 1972 (Pub. L. 92-500, 86 Stat. 816, (33 U.S.C. 1251 et seq.)).

2. Subpart A of Part 129 is further amended by adding a new paragraph (f) to § 129.4 to read as follows:

§ 129.4 Toxic pollutants.

* * * * *

(f) Polychlorinated Biphenyls (PCBs)—polychlorinated biphenyls (PCBs) means a mixture of compounds composed of the biphenyl molecule which has been chlorinated to varying degrees.

3. Subpart A of Part 129 is further amended by adding a new § 129.105 to read as follows:

§ 129.105 Polychlorinated biphenyls (PCBs).

(a) *Specialized definitions.* (1) "PCB Manufacturer" means a manufacturer who produces polychlorinated biphenyls.

(2) "Electrical capacitor manufacturer" means a manufacturer who produces or assembles electrical capacitors in which PCB or PCB-containing compounds are part of the dielectric.

(3) "Electrical transformer manufactures" means a manufacturer who produces or assembles electrical transformers in which PCB or PCB-containing compounds are part of the dielectric.

(4) The ambient water criterion for PCBs in navigable waters is 0.001 ng/L

(b) *PCB Manufacturer*—(1) *Applicability.* (i) These standards or prohibitions apply to:

(A) All discharges of process wastes;

(B) All discharges from the manufacturing or incinerator areas, loading and unloading areas, storage areas, and other areas which are subject to direct contamination by PCBs as a result of the manufacturing process, including but not limited to:

(*1*) Stormwater and other runoff except as hereinafter provided in subparagraph (ii); and

(*2*) Water used for routine cleanup or cleanup of spills.

(ii) These standards do not apply to stormwater runoff or other discharges from areas subject to contamination solely by fallout from air emissions of PCBs; or to stormwater runoff that exceeds that from the ten-year 24-hour rainfall event.

(2) Analytical Method Acceptable—Environmental Protection Agency method specified in 40 CFR Part 136 except that a 1-liter sample size is required to increase analytical sensitivity.

(3) Effluent Standards: (i) *Existing Sources.* PCBs are prohibited in any discharge from any PCB manufacturer; (ii) *New Sources.* PCBs are prohibited in any discharge from any PCB manufacturer.

(c) *Electrical Capacitor Manufacturer*—(1) *Applicability.* (i) These standards or prohibitions apply to:

(A) All discharges of process wastes; and

(B) All discharges from the manufacturing or incineration areas, loading and unloading areas, storage areas and other areas which are subject to direct contamination by PCBs as a result of the manufacturing process, including but not limited to:

(*1*) Stormwater and other runoff except as hereinafter provided in subparagraph (ii); and

(*2*) Water used for routine cleanup or cleanup of spills.

(ii) These standards do not apply to stormwater runoff or other discharges from areas subject to contamination solely by fallout from air emissions of PCBs; or to stormwater runoff that exceeds that from the ten-year 24-hour rainfall event.

(2) *Analytical Method Acceptable.* Environmental Protection Agency method specified in 40 CFR Part 136, except that a 1-liter sample size is required to increase analytical sensitivity.

(3) *Effluent Standards*—(i) *Existing Sources.* PCBs are prohibited in any discharge from any electrical capacitor manufacturer; (ii) *New Sources.* PCBs are prohibited in any discharge from any electrical capacitor manufacturer.

(d) *Electrical Transformer Manufacturer*—(1) *Applicability.* (i) These standards or prohibitions apply to:

(A) All discharges of process wastes; and

(B) All discharges from the manufacturing or incineration areas, loading and unloading areas, storage areas, and other areas which are subject to direct contamination by PCBs as a result of the manufacturing process, including but not limited to: (*1*) Stormwater and other runoff except as hereinafter provided in subparagraph (ii); and (*2*) Water used for routine cleanup or cleanup of spills.

(ii) These standards do not apply to stormwater runoff or other discharges from areas subject to contamination solely by fallout from air emissions of PCBs; or to stormwater runoff that exceeds that from the ten-year 24-hour rainfall event.

(2) *Analytical Method Acceptable.* Environmental Protection Agency method specified in 40 CFR Part 136, except that a 1-liter sample size is required to increase analytical sensitivity.

(3) *Effluent Standards*—(i) *Existing Sources.* PCBs are prohibited in any discharge from any electrical transformer manufacturer; (ii) *New Sources.* PCBs are prohibited in any discharge from any electrical transformer manufacturer.

(e) *Adjustment of effluent standard for presence of PCBs in intake water.* Whenever a facility which is subject to these standards has PCBs in its effluent which result from the presence of PCBs in its intake waters, the owner may apply to the Regional Administrator (or State Director, if appropriate), for a credit pursuant to the provisions of § 129.6, where the source of the water supply is the same body of water into which the discharge is made. The requirement of subparagraph (1) of § 129.6(a), relating to the source of the water supply, shall be waived, and such facility shall be eligible to apply for a credit under § 129.6, upon a showing by the owner or operator of such facility to the Regional Administrator (or State Director, if appropriate) that the concentration of PCBs in the intake water supply of such facility does not exceed the concentration of PCBs in the receiving water body to which the plant discharges its effluent.

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