PCB Reg June 7 1978

# Monsanto

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August 4, 1978

Office of Toxic Substances (TF-794)
Environmental Protection Agency
401 "M" Street, S.W.
Washington, D. C. 20460

ATTENTION: Ms. Joni T. Repasch

Dear Ms. Repasch:

On June 7, 1978, the EPA published a proposed rule in 43 Federal Register beginning on page 24,802 covering Manufacturing, Processing, Distribution in Commerce, and Use Bans of Polychlorinated Biphenyls (PCB's). This letter sets forth Monsanto Company's comments on the proposed rule. Please include these comments, with the attachment, in the official record of this proceeding.

Our comments are divided into two parts. The first part provides general comments which focus on the EPA's proposed maximum concentration of 50 ppm and the justifiable need for a heat transfer system use authorization. The second part sets forth specific language and recommendations related to these matters, and to certain other matters in specific sections of the proposed rule.

## GENERAL COMMENTS

The proposed immediate, mandatory removal from service of heat transfer systems containing fluids whose PCB concentration equals 50 ppm or greater is not justified in view of the lack of any significant risk to health or the environment. To require industry immediately to remove from service and drain all these systems or to replace the systems entirely to meet a 50 ppm concentration level is an arbitrary mandate and will generate a substantial, immediate risk of injury and environmental harm from spillage and result in an abrupt, massive buildup of PCB contaminated fluid without available disposal facilities or time to develop orderly plans to

carry out the disposal. Furthermore, the EPA cites no evidence in the preamble of any environmental or health hazard to support the proposed reduction in the regulated concentration of PCB's in a PCB mixture under Section 761.2(w) from 500 ppm to 50 ppm, nor does the May, 1978 EPA Support Document/Draft Voluntary Environmental Impact Statement upon which the proposed rules are based support this reduction. Therefore, Monsanto strongly recommends the EPA withdraw this proposed reduction.

Yet even with the withdrawal of the 50 ppm concentration, it is imperative that an authorization be granted for continued use of heat transfer systems containing residual PCB's. The evidence conclusively establishes that the heat transfer system use activity meets the requirements for granting an authorization to allow continued operation, and Monsanto requests the EPA to grant such an authorization. On page 42 of the EPA Support Document, the EPA states that before it grants an authorization for continuation of a non-totally enclosed use activity the following two requirements must be met:

(1) the activity authorized must not pose an unreasonable risk of injury to health or the environment, and

(2) the ban would cause major and extensive economic disruptions.

Regarding the first requirement, an analysis of potential PCB exposure from various sized PCB contaminated heat transfer systems is illustrative of the insignificant risk of injury to health or the environment posed by authorizing continued use of these systems. The highest risk area for leakage in these systems is in the pump seals, but inspection maintenance for pump seals is also emphasized because of user awareness of this risk. A pump seal failure would be rapidly detected by inspectors or automatic monitoring devices and loss of fluid would be unlikely to exceed from 1% to 5% of the total fluid volume in the system.

For example, a 500 gallon system containing 1% volume of PCBs has a total PCB content equal to 60 pounds, and a leak of 5% of the total fluid (which is unlikely) would release only 3 pounds of PCB's. Similarly, a 10,000 gallon system containing a PCB contamination of 500 ppm has a total PCB content of 60 pounds, and a leak of 5% of the total fluid (again unlikely) would release only 3 pounds of PCB's. A leakage of 3 pounds of PCB's is below the EPA's designated harmful quantity for PCB spills into navigable waters (10 pounds) under 40 CFR 118.4 issued pursuant to the Federal

Water Pollution Control Act and, in Monsanto's opinion, does not create a significant risk to health or the environment. Furthermore, the above examples are worst case situations because they assume no spill prevention program (for example, diking) or effluent control program in effect. If such programs were in effect it would be highly unlikely for any amount of PCB's approaching 3 pounds to escape into the environment.

The proposed immediate, mandatory removal of these systems from service also meets the standards for the second requirement for an authorization by resulting in substantial, widespread economic disruption. Since the EPA states in the preamble and the Support Document that it lacks information necessary to evaluate the impact of the ban on the heat transfer system use activity, the following information is presented which is generally consistent with the specific information requests in 43 FR 24810 relative to hydraulic die-casting systems, and which clearly and conclusively demonstrates this economic impact:

1. Number of systems contaminated. It is estimated that when the sale of PCB heat transfer fluids was discontinued in 1972 there were 450 heat transfer systems using this fluid. This estimate is based on (a) the current level of new systems introduction, (b) the ten year period (1962-72) during which PCB heat transfer systems were specified, and (c) the total volume of 20 million pounds of PCBs sold for heat transfer systems from 1962 through 1971 as reported by the 1972 Interdepartmental Task Force on PCBs COM-72-10419 pages 6 and 7.

2. The average liquid volume of the systems. It is estimated that about one-half of all PCB contaminated heat transfer systems have less than a 500 gallon liquid volume. Systems greater than 500 gallon volumes are estimated to average about 2,000 gallons. These estimates are based upon a review of systems filled in 1977 and 1978 and upon the average system size of Monsanto units converted in the 1970-72 period - a typical cross section of the industry pattern.

3. The range of liquid volume. Heat transfer systems of greater than 10,000 gallons are unusual. Small experimental pilot plant units may contain 50 gallons.

4. Fluid top-off. Heat transfer fluids are designed to be thermally stable within the recommended temperature range of operation and to operate at low pressure. Accordingly, routine top-off is minimal. Average top-

off may be higher because of fluid removal from parts of the system when maintenance is performed on other components of the system such as pumps, valves and heaters or in the event a system malfunction causes a thermal degradation of the fluid. Monsanto's experience indicates that some systems may require no top-off for three to five years; other systems may require a top-off of 50% in one year if major maintenance programs requiring drainage are undertaken. However, systems are not routinely drained.

5. Efforts to reduce PCB contamination. We estimate that greater than 90% of the plants operating with PCB heat transfer systems converted to alternative non-PCB fluids in 1970-72. Some of those converting drained and refilled the system with non-PCB fluid; some drained, flushed and refilled; some drained, chemically cleaned and refilled; and other dismantled and discontinued use of liquid systems. We estimate that these efforts have generally resulted in current system PCB levels in the industry ranging from around 100 ppm to several thousand ppm. Recovery from heat transfer systems would generally be expected to be greater than 90%. Note that for the purposes of these comments the term "recovery" is defined as the percentage of total system fluid volume extracted from the system by draining.

6. Servicing fluids to remove PCB's from systems. Following is a review and analysis of the potential success of three methods the EPA has considered for PCB removal:

   (a) Drain and refill. If small systems (500 gallons or less) are drained and refilled with a non-PCB fluid, a 98-99% recovery of dissolved PCB's can be expected. This service method will not, however, remove PCB absorbed by the heat transfer system walls. In the case of systems larger than 500 gallons a 90-99% recovery can be expected depending upon the complexity of the piping layout and heat exchanger design.

   (b) Distillation is of questionable efficiency in separating and removing PCB's from heat transfer fluid due to the similarity in boiling ranges of PCB's and non PCB heat transfer fluids. The boiling ranges for these respective fluids are as follows:

| | | |
|---|---|---|
| PCB | Therminol FR 1 | 617°F - 690°F |
| | Therminol FR 2 | 644°F - 707°F |

| | | |
|---|---|---|
| Non-PCB | Therminol 55 | 635°F - 734°F |
| | Therminol 66 | 643°F - 668°F |

(c) Carbon treatment experiments to remove PCB's are currently being conducted to investigate the carbon treatment removal method, but no data are presently available.

7. Present PCB levels in systems - We estimate the range of PCB concentration levels in heat transfer systems to be from about 100 ppm to about 30,000 ppm.

8. Cost of new systems - The cost of a new system could result in a large dollar expenditure compared to the much lower cost of replacing fluid. Replacing a heat transfer system may well mean totally rehabilitating a plant because these systems are integral parts of the users' plants, and replacement of heat transfer systems is impossible without replacement of reactors, coolers and heat exchangers. Such replacement would usually require a multimillion dollar expenditure. Further, the costs of lost production would be extraordinarily high in terms of lost wages, lost sales and product shortages which could impact a wide area of other manufacturing industries using finished products during the length of time required to replace each system. Thus the immediate, mandatory removal of these systems from service would result in substantial, widespread economic disruption in industries using heat transfer systems and the products produced from processes using such systems.

9. Cost of draining and refilling systems - We estimate the cost of draining and refilling systems would be from $10 million to $30 million, depending upon authorized PCB level, and based upon the model of an average 2,000 gallon system and the estimated 450 systems in the industry. For example, PCB reduction to a concentration level of 500 ppm in a 2,000 gallon system, with a current 1% PCB volume (10,000 ppm) and assuming a 90% fluid recovery, would result in a marginal removal cost of approximately $220 per pound. It is estimated that to reduce from a 500 ppm level to a 50 ppm level would require a marginal removal cost of about $30,000 per pound. Starting with a PCB content in the 2,000 gallon system of 240 pounds, draining the system (90% recovery) would leave 200 gallons of fluid containing 2 gallons of PCB's or 24 pounds. This quantity should, when the system is refilled with 2,000 gallons of flushing fluid, result in a PCB concentration of 1500 ppm. A

second draining and refilling with flushing fluid should initially drop PCB's to 2.4 pounds or 150 ppm, but this amount would shortly increase as PCB's are released from the surface walls into the fluid. Once a proper concentration has been obtained to assure the concentration remains below 500 ppm, the flushing fluid would be drained and the system refilled with non-PCB heat transfer fluid.

The direct cost estimates of flushing and draining, excluding costs associated with lost production and resulting disruption of supply to consumers, are as follows:

| | | |
|---|---|---|
| (a) | Flushing fluid - 2x2,000 gallons at $2.00 per gallon | $8,000 |
| (b) | New fill of non-PCB heat transfer fluid - 2,000 gallons at $8.00 per gallon | $16,000 |
| (c) | Disposal of initial drained fluid and 2 flushing fluid changes - 6,000 gallons at $2.26 per gallon | $16,000 |
| (d) | Labor and overhead - 4 men 10 to 15 days | $12,000 |
| | Total | $52,000 |

This estimate assumes that only two flushings are required and that draining and flushing proportionately reduces PCB concentration level without a major breakdown of the system involving gasket replacement or rewelding which could easily double or triple costs. Based upon this estimate, the cost of removal of 235 pounds would give a marginal removal cost of $220 per pound to achieve a residual level below 500 ppm. To achieve a level of 50 ppm it is likely that at least two further drain and flush procedures and chemical cleaning would be required. At $50,000 per procedure, the final 1.6 pound removal would carry a marginal removal cost of at least $30,000 per pound.

The above information relative to environmental and health injury and economic impact is clear evidence which meets the two requirements necessary to support the grant of a use authorization for heat transfer systems containing residual PCB's. Accordingly, Monsanto recommends the proposed rules be revised to authorize for a period of 5 years the continued use and servicing of all 500 gallon capacity or less heat transfer systems used and serviced in a manner other than a totally enclosed manner to the extent these systems contain 1% or less by volume of PCB's, provided users attain this 1%

PCB volume within one year after the effective date of the rule. For systems with greater than 500 gallon capacity, Monsanto recommends the EPA authorize for 5 years continued use and servicing of these systems in a manner other than a totally enclosed manner to the extent they contain a PCB concentration of 500 ppm or less, provided users attain this 500 ppm PCB concentration within 2 years after the effective date of the rule. These transition time periods would permit an orderly reduction of PCB levels during which disposal of fluids by incineration could be planned, thereby avoiding spillage and buildup of PCB contaminated fluid inventories awaiting disposal. Please note that proposed language for this use authorization is set forth as new Section 761.31(h) on pages 10-11 of these comments.

## Specific Suggested Changes in the Proposed Rules

Sec. 761.2(w) "PCB mixture." In addition to the proposed arbitrary 50 ppm concentration, the definition includes any material, no matter how dilute in PCB concentration, if the material is contaminated by a substance containing a PCB concentration of 50 ppm or greater. For example, if a gallon of heat exchange fluid containing 500 ppm PCB were diluted to 1,000 gallons with a non-PCB flushing fluid (final concentration 0.5 ppm PCB), the resulting flushing fluid when drained would still be arbitrarily considered a PCB mixture. We recommend the definition be changed to read:

> (w) "PCB Mixture" means any combination of chemical substances which contains 500 ppm (0.050 percent on a dry weight basis) or greater of a PCB chemical substance. This definition includes, but is not limited to, dielectric fluid and contaminated solvents, oils, waste oils, heat transfer fluids, other chemicals, rags, soil, paints, debris, sludge, slurries, dredge spoils, and materials contaminated as a result of spills.

Sec. 761.2(bb) "Manufacture 'for Commercial Purposes.'" We recommend for clarification the addition of the following subsection to the definition, which is consistent with the discussion by the EPA set forth in column 1, 43 FR 24805:

> (3) As the desired product. Inadvertent manufacture as a by-product in the manufacture of another chemical is not "manufactured for commercial purposes."

Sec. 761.2(cc) "PCB Sealant, Coating, or Dust Control Agent." This term is defined based on the state of the

analytical art. In complex mixtures such as waste oils, analysis for PCB is not sensitive because of background interference. We recommend that a concentration level be set related to the toxicological properties of PCB's and the demonstrated injury risk associated with human and environmental exposure. Such a concentration would, among other things, avoid a moving target definition depending upon the sophistication of the analytical equipment used.

Sec. 761.2(dd) "Process 'for Commercial Purposes.'" We recommend the addition of the following subsection to the definition. This is consistent with the discussion in column 1, 43 FR 24805 and our proposed modification of section 761.2(bb).

> (3) for means other than PCB removal. Processing which removes PCB from the material to be used for commercial purposes does not constitute "processing for commercial purposes."

Sec. 761.2(ff) "Significant Exposure." This term is defined based on the state of the analytical art. We believe that significant exposure should be, as discussed above relative to Section 761.2(cc), a specific concentration related to the toxicological properties of PCB's and to injury risk associated with human or environmental exposure. We recommend, consistent with the 1977 American Conference of Governmental and Industrial Hygenists publication of Threshold Limit Values for Chemical Substances in the Workplace, that this section be amended to read as follows:

> (ff) "Significant Human Exposure" means any exposure of humans to PCB chemical substances or PCB mixtures in excess of 0.5 mg/cu. meter TWA for a 40 hour week by an applicable analytical method.

Sec. 761.1(gg) "Small Quantities for Research and Development." The definition of this term is unjustified and arbitrary. No data are presented in the preamble by the EPA that use in research has posed any measurable risk of injury to health or harm to the environment. Monsanto has no evidence of any adverse effect of PCB's in laboratory use. We suggest as an alternative replacing section 761.2(ff) with the following wording taken in part from the TOSCA Inventory Reporting Regulations, 42 FR 64576, section 710.2(y):

> (gg) "Small Quantities for Research and Development" means any quantity of PCB chemical substance or PCB mixture manufactured or processed only for purposes of scientific experimentation or analysis of chemical

research on, or analysis of, PCB's, including research or analysis for the development of a product that (1) are no greater than reasonably necessary for such purposes, and (2) are used by, or directly under the supervision of, a technically qualified individual(s).

It would also seem appropriate to include as new section 761.2(kk) the definition of "Technically Qualified Individual" based upon section 710.2(aa) of the TOSCA Inventory Reporting Regulations.

Sec. 761.2(hh) "Totally Enclosed Manner." This term is defined with reference to section 761.2(ff) and, consistent with our recommended changes above to that section, we suggest section 761.2(hh) be changed to read:

(hh) "Totally Enclosed Manner" means any manner that will ensure any exposure of human beings or the environment to PCB chemical substances will be insignificant.

Sec. 761.2(jj) "Applicable Analytical Method." We propose the following new definition of this term:

(jj) "Applicable Analytical Method" means a method (other than the perchlorination procedure) which distinguishes PCB Chemical Substance as defined in section 761.2(t) from all other materials.

The basis for exclusion of the perchlorination procedure is discussed more fully in the attached letter dated March 15, 1976 from J. Coleman Weber of Monsanto to Dr. I. E. Wallen of the EPA.

Section 761(kk) "Technically Qualified Individual." We proposed a new definition for this term with the following wording taken from Section 710.2(aa) of the TOSCA Inventory Reporting Regulations, 42 FR 64576:

(aa) "Technically Qualified Individual" means a person (1) who because of his education, training, or experience, or a combination of these factors, is capable of appreciating the health and environmental risks associated with the chemical substance which is used under his supervision, (2) who is responsible for enforcing appropriated methods of conducting scientific experimentation, analysis, or chemical research in order to minimize such risks, and (3) who is responsible for the safety assessments and clearances related to the procurement, storage, use, and disposal of the chemical substance as may be appropriate or required

within the scope of conducting the research and development activity. The responsibilities in clause (3) of this paragraph may be delegated to another individual, or other individuals, as long as each meets the criteria in clause (1) of this paragraph.

Section 761.31(f) Hydraulic die casting systems-use. The same considerations that support a use authorization for hydraulic die casting systems apply to other industrial hydraulic systems as well. Therefore, we recommend that all references in this section to the words "hydraulic die-casting system" be changed to "industrial hydraulic system."

Section 761.31(h) Heat transfer systems - use. We recommend this new use authorization as follows:

(h) Heat Transfer Sytems - Use. Heat transfer systems containing PCB mixtures may be used and serviced in a manner other than a totally enclosed manner until five years after the effective date of this rule subject to the following conditions:

(1) One year after the effective date of this rule no heat transfer systems of 500 gallon capacity or less may contain fluid whose PCB mixture volume is greater than 1%.

(2) Two years after the effective date of this rule no heat transfer systems of greater than 500 gallon capacity may contain fluid whose concentration of PCB mixture exceeds 500 ppm.

(3) Ninety days after the effective date of this rule each person who owns a heat transfer system containing residual PCB's above the authorized levels shall report to EPA, and retain records of, the number of such systems he owns, the volume capacity of each such system, and the PCB volume or concentration, as appropriate, of the fluid contained in such systems. This report shall be sent to the Pesticides and Toxic Substances Enforcement Division (EN-342), Environmental Protection AGency, 401 M Street S.W., Washington, D. C. 20460. Each person who owns such a system shall also keep a current record of the dates of each draining or refilling and the measured PCB concentration or volume, as appropriate, of the fluid in the refilled systems on those dates for each system. If any such system is

sold, the transaction and the parties thereto shall be reported to EPA by the Seller. At its discretion, EPA may require the submission of a copy of a person's current record.

(4) Each report submitted to EPA under paragraph (h)(3) of this section shall contain the certification found in §761.31(b)(2).

(5) Each person who owns a heat transfer system containing residual PCB's above the authorized levels shall develop and implement a plan for the control of PCB exposures and contamination in accordance with Annex VII.

Your favorable consideration of the above comments is respectfully requested.

Sincerely,

W. R. Corey
Director, TOSCA Administration

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