UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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File:NPCD/FOB;CHRON-READING;AUTHOR:/Letter to University of Detroit
RE: Reuse of auto shredder residue to produce new products

SEP 29 1999

Vahid Sendijarevic, Ph.D.
Research Professor
University of Detroit Mercy
4001 W. McNichols Road
P.O. Box 19900
Detroit, Michigan 48219-0900

Dear Dr. Sendijarevic:

This letter is in response to your written inquiry of August 23, 1999 and your phone call of September 21, 1999 regarding the utilization of auto shredder residue (ASR) contaminated with polychlorinated biphenyls (PCBs). In your letter you have described several scenarios in which you process ASR into various types of products. You have requested information regarding whether the research and development of these products is permitted under the regulations. Additionally, you have requested information regarding the concentration of PCBs that is allowed in the input materials as well as the final products. My staff has reviewed your inquiries and our response follows.

The Toxic Substances Control Act (TSCA) prohibits the manufacture, processing, distribution in commerce, and use (or re-use) of PCBs, regardless of the PCB concentration, unless specifically authorized by EPA. There is no provision in TSCA which encourages the recycling of PCBs (i.e., pursuing ways to make waste containing PCBs into new products). Additionally, there are no provisions in TSCA or the PCB regulations that allow research and development with PCBs to develop a new product.

In order to authorize the use of PCB containing materials in shredder residue EPA would have to propose the use through rulemaking and make a finding that the use would pose no unreasonable risk of injury to health and the environment. In addition, if you want to process shredder residue and distribute the resulting products in commerce you would need to obtain an exemption under section (6)(e)(3)(B) of TSCA. In order to qualify for an exemption you must demonstrate that the activities pose no unreasonable risk of injury to health and the environment and that no viable substitute for the PCB containing starting material exists. Compliance with this requirement may be difficult since your efforts involve the use of PCB waste materials and other materials are available to make the products you described. You would also need to obtain an exemption to conduct research and development with PCBs to develop a new product. You would need to meet the standards of section (6)(e)(3)(B) to be granted an exemption for this activity as well. In the past, EPA received a request similar to the activities discussed above, but has yet to grant an exemption to process PCB-containing shredder residue into consumer products for distribution in commerce.

CONCURRENCES

SYMBOL	7404	7404						
SURNAME	McGurk	Bay						
DATE	9/28/99	9/29/99						

EPA Form 1320-1A (1/90)

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Aside from obtaining an exemption, the only mechanism available to continue this work is to ensure that the incoming waste stream (i.e., the material that enters the shredder) does not contain PCBs. The process of shredding automobiles and white goods tends to dilute the total PCB concentration since you are simultaneously shredding non-PCB products with PCB containing waste. The regulations at 40 CFR 761.1(b)(5) prohibit the dilution of PCBs. Therefore, if a facility tests the shredder residue or the recycled product and obtains results that are <50 ppm PCBs this does not mean that the original source of the shredder material was <50 ppm PCBs. Furthermore, a concentration of <50 ppm PCBs does not indicate that the shredder residue is "unregulated" for use.

As a result of the provisions discussed above, the incoming waste stream (i.e., the material that enters the shredder) must not contain PCBs. It can be difficult to reproducibly detect and measure PCBs at low concentrations. EPA has long recognized 2 ppm as a level at which PCBs can reliably and inexpensively be quantified in most materials and media. Therefore, if the incoming waste stream contains less than 2 ppm PCBs, EPA recognizes that waste stream as not containing PCBs at a detectable level. This type of waste stream can be processed and the resulting products may be distributed in commerce without approval from EPA. Please note that the less than 2 ppm concentration refers to the concentration of PCBs in the incoming waste stream (i.e., the concentration of PCBs in the material before it enters the shredder), not the concentration of PCBs in the shredder residue or the recycled product.

If you have any further questions on this matter, please contact Sara McGurk at (202) 260-1107.

Sincerely,

John W. Melone, Director
National Program Chemicals Division

cc: Kim Tisa, EPA Region 1
Dave Greenlaw, EPA Region 2
Charlene Creamer, EPA Region 3
Stuart Perry, EPA Region 4
Tony Martig, EPA Region 5
Lou Roberts, EPA Region 6
Dave Phillippi, EPA Region 7
Dan Bench, EPA Region 8
Max Weintraub, Region 9
Dan Duncan, Region 10

UNIVERSITY OF DETROIT MERCY

Polymer Institute

August 23, 1999

Mr. John Melone
Division Director
National Program Chemicals Division
US Environmental Protection Agency
401 M. Street SW
Mail Code #7404
Washington DC 20460

Re: Utilization of ASR - PCBs concentration limits

Dear Mr. Melone,

The Polymer Institute of the University of Detroit Mercy has been actively involved for several years in research and development of processes for utilization of ASR. Some projects were supported by the EPA funds. The major obstacle in application of the products developed from ASR and ASR streams (components) separated from the ASR such as fluff, heavy fractions, plastics or foams, is the presence of PCBs. We would appreciate very much if you can provide us with information on the PCBs concentration limits in ASR or ASR fractions (streams) as input (raw) materials and the PCBs concentration limits in the final products.

The following are some of the examples for the utilization of ASR and ASR components:

1. ASR or ASR streams (fractions) can be transferred into products by simple grinding/binding technology. In this case, all components of the ASR remain encapsulated in the final product (with a minimum or without any chemical fixation).

2. Plastics or foams are separated from ASR by utilizing flotation processes. The foam is rebonded into products such as carpet underlays with or without binders. The plastic is reprocessed 100% as a sole plastic or in mixture with virgin or scrap materials.

In this example, a portion of the PCBs will be washed out through the flotation process.

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3. Foams are separated from ASR by flotation processes and then transformed into liquids by chemical treatment (transesterification/glycolysis/hydrolysis/ aminolysis, etc.). These liquids will be marketed as raw materials (polyols) to the polyurethane industry. These polyols will be utilized to manufacture various polyurethanes (foams, binders, elastomers, etc.) for various applications including automotive and transportation industries, household appliances, etc. These polyols will be reacted with isocyanates as sole polyols and in mixtures with virgin (commercial) polyols.

In this case, a portion of the PCBs will be eliminated through the flotation process and a portion by filtration of liquid chemolysis products.

Looking forward to hearing from you.

Best regards.

Sincerely yours,

Vahid Sendijarevic, Ph.D.
Research Professor

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 2 9 1999

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

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University of Detroit Mercy
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