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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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OFFICE OF TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Further Study of Chemical Spill in Sturgeon,
Missouri

FROM: Steven D. Jellinek
Assistant Administrator
for Toxic Substances (TS-788)

TO: Kathleen A. Camin
Administrator, EPA Region VII
324 East 11th Street
Kansas City, Missouri 64106

On February 8 and 9, Dr. Joseph Seifter, Office of Testing and Evaluation (OTE), Office of Toxic Substances (OTS), led a team of medical and public health experts to the Sturgeon, Missouri area in connection with the chemical spill on January 10. The team appeared before a town meeting arranged by Senator Thomas Eagleton. They subsequently worked closely with your staff, especially following the findings of dioxin contamination in the spilled material, and presented a list of suggestions to Warren Muir, Deputy Assistant Administrator for Testing and Evaluation (OTE). Based upon Dr. Muir's recommendations, I am directing appropriate staff in OTS to carry out specific actions.

The Special Pesticide Review Division, Office of Pesticide Programs, will continue to assist in arranging for dioxin analysis of samples collected by Region VII or supplied by Monsanto with the most sensitive detection methods available.

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2. The Health Review Division (OTD) will continue to perform studies on clean-up workers to document exposure levels. OTD has begun to carry out this task using our contract with the American Public Health Association.

Dioxin analysis of excavators' blood will give us an idea if any dioxin is to be found in the blood of local residents. The exposure of these workers is far more intense than the exposure of the residents.

Skin of these workers will be examined for (a) hives, (b) rash or other manifestation of histamine release, and (c) photosensitization.

Analysis of urine from these workers for glucuronides and sulfates will be performed. If these substances are not present, then exposure to phenols was minimal.

The local population can then be assumed to be at exceedingly low risk to the hazards of exposure to the chemicals involved.

Blood and urine analyses of workers who have already shown signs of dermatologic effects is proceeding immediately.

3. The Assessment Division (OTD) will initiate our assessment process on chlorophenol and dioxins. It is expected that Chemical Hazard Information Profiles (CHIPs) will be prepared. Work on one group of substances, the dioxins, is already underway.

4. The Office of Program Integration and Information will obtain unpublished health and safety studies, especially from manufacturers of the compounds involved. Manufacturers and processors of the substances in question will be contacted for information on their past, current and planned activities concerning epidemiologic study of exposed workers. The study of human populations to seek new information on the possible chronic effects of the compounds would most efficiently and fruitfully be conducted on workers with long-term, continuous and high levels of exposure. The availability of medical, personnel and plant monitoring records to conduct such studies will be ascertained.

5. The Environmental Review Division (OTD) will take all available data and attempt to estimate concentrations of the substances involved in air, water, and soil following the spill. These estimates will be derived in part from models under development for environmental exposure assessment. Residents have expressed concern for exposure levels experienced prior to evacuation of the town. Before monitoring devices could be set up. Special consideration will be given to this period of time.

In addition, I recommend that Region VII take the following steps, if they have not been initiated already.

1. Additional extractions of spilled material from contaminated soil should be prepared for chlorophenol and dioxin analysis. These should include samples taken from the most heavily contaminated areas. Data from these analyses should be used to estimate chlorophenol and dioxin concentrations in excavated material, especially the portion not removed in sealed drums.
2. Analyses of a nearby shallow well and cistern on February 6 showed levels of 2-chlorophenol and phenol below 1.5 parts per billion. Confirmatory samples should be taken and analyzed for dioxin as well.
3. A sample of nearby grazing land should be analysed for chlorophenol and dioxins.
4. Shortly after the spill, the loss of two calves and a hog at a nearby farm was reported. Also, several residents expressed concern for the salability of their livestock. Accordingly, tissues and/or blood of nearby livestock should be analyzed for chlorophenol and dioxin. This analysis should focus on the animals lost at the nearby farm, but should also include at least one animal which has been at the farm since the time of the spill.
5. The University of Missouri College of Veterinary Medicine at Columbia has indicated to Mike Sanford, Boone County Health Director, a willingness to inspect the lost animals and to perform experiments using the raw material and/or soil extracts. This possibility should be explored.

6. Residents stated that odors from the spill were more intense inside their homes than outside. If this problem still exists, indoor and outdoor air measurements should be made at these homes.

7. The gaseous phase of chlorophenol is heavier than air and may collect in low-lying areas. If odors persist at such areas, they should be monitored.

8. The request for heightened awareness on the part of local physicians and health care facilities, especially hospital emergency rooms and clinics, should be continued. We see no reason to expect any adverse health effects, but the reporting of unusual ailments or ailments occurring with unusual frequency should be strongly encouraged. Such possible effects should include, but should not be limited to:

a. dermatologic problems, especially among children

b. liver and kidney dysfunction

c. respiratory problems

d. reproductive problems

e. neurologic disorders

If they were to occur, liver or kidney effects might be seen first in pregnant women. Vomiting in early pregnancy would probably be more severe if the liver were injured. Pre-eclampsia (toxemia) would probably be more manifest in the presence of kidney dysfunction. Both effects would be readily seen by alerted local obstetricians.

Farmers, veterinarians and pet owners should also be requested to make note of any unusual physical or behavioral characteristics of animals in the area. Animals are occasionally more sensitive to certain chemical insults and often become more highly exposed than humans.

9. Close cooperation should be continued with the office of Mike Sanford, and other local and state officials.

The Office of Toxic Substances is pleased to continue its assistance to Region VII in dealing appropriately with this chemical spill. If our expertise may be of further help, please let us know immediately.