

Prospective Research and Regulatory Issues
Involving Dioxins and Related Compounds in
the United States*

By

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ABSTRACT

In the United States, research, risk assessment, and regulatory issues involving dioxins and related compounds continue to represent important areas. Many areas of research emphasis from the mid-1980's are being continued or completed, with data and understanding to help fill knowledge voids. In the regulatory arena, the United States continues to promulgate regulations and standards to reduce potential risk to human health and the environment.

INTRODUCTION

The purpose of this paper is to describe prospective research and regulatory issues relevant to dioxins and related compounds in the United States. The special session on research and regulatory issues is the third session of its type, the first two being held at Dioxin '88 in Umea, Sweden and Dioxin '89 in Toronto, Canada. The first two sessions were organized as follow-up activities to the Pilot Study on International Information Exchange on Dioxins and Related Compounds. The purpose, scope, and activities of this group of the Committee on the Challenges of Modern Society (CCMS) have been described previously (Bottimore et al., 1989). The special sessions were intended to extend the information exchange activities to a larger audience in hope of impacting future research plans. Information describing future research and regulatory activities promotes cooperative effort and reduces duplication of effort. In previous sessions, at least nine different nations have contributed to the meetings and/or the proceedings (CCMS, 1988; Kutz and Bottimore, 1988).

RESEARCH ISSUES

Research involving dioxins and related compounds in the United States is conducted by both the Federal government, state government, industry and private sectors. The majority of Federally-funded research addresses exposure and human health effects of dioxins and related

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compounds. The Environmental Protection Agency (EPA) Office of Research and Development is continuing to conduct research aimed at improving exposure and risk assessments for this group of compounds. Included in these efforts are studies of uptake and accumulation of CDDs and CDFs from contaminated soil by plants and animals. Data from these research projects will improve the modeling and predictive capabilities of EPA in addressing a wide variety of exposure scenarios. The accuracy of risk assessments for dioxins and related compounds is of concern to the Agency. In the next year, EPA will be hosting a workshop on the use of the receptor-mediated model of risk assessment for 2,3,7,8-TCDD. The Agency also recently adopted the I-TEF method of risk assessment for complex mixtures of dioxins and furans (U.S. EPA, 1989).

The EPA Office of Water is continuing research efforts related to dioxins and related compounds in the pulp and paper industry. Investigations are examining the formation of dioxins and related compounds in the bleaching process. Included in their efforts are surveys of mills, analysis of fish tissue in receiving waters, and topics related to the Office's regulatory actions on the pulp and paper industry.

Other Federal agencies in the United States that play large roles in research include the National Institute for Occupational Safety and Health (NIOSH) and the Centers for Disease Control (CDC). NIOSH is nearing completion of two major epidemiological studies of workers exposed to 2,3,7,8-TCDD. These studies are of considerable interest because of the large cohorts, detailed information on occupational exposure, and the potential to correlate health effects with exposure. The CDC is also continuing the analysis of blood serum from exposed individuals in Seveso. Recently reported results show some of the highest blood levels of 2,3,7,8-TCDD ever measured.

Other research efforts include activities sponsored by the private sector and industry such as the pulp and paper industry. They are continuing to examine the specific cases of dioxin formation as well as the extent, magnitude, and location of contamination from mills. Efforts are also target at technologies to reduce or eliminate the formation of dioxins and related compounds in their processes.

REGULATORY ISSUES

Regulatory activities in the United States will continue to focus on sources of dioxin contamination not addressed by previous regulations or standards. These include municipal waste incinerators, pulp and paper mills, wood treatment operations, and industrial chemicals.

Most of the regulatory action in the United States is targeted at the pulp and paper industry. EPA, Food and Drug Administration (FDA), and Consumer Products Safety Commission (CPSC) recently concluded a multimedia risk assessment of products, effluents, and wastes from the manufacture of chlorine-bleached pulp and paper. Regulatory action is under way to reduce discharge of dioxin-contaminated wastewaters to receiving streams. EPA will also be developing regulations under the Toxic Substances Control Act (TSCA) and the Resource Conservation and Recovery Act (RCRA) to address disposal of wastewater treatment sludge from

pulp and paper mills. FDA will be assuming the lead role in reducing risks to consumers from food contact papers.

EPA and the states will also be working together to address the discharge of wastewaters under the Clean Water Act. The states have been required to adopt water quality standards for dioxins and EPA will play a Federal oversight role.

Another area of regulatory activity for the EPA is in the wood treatment industry. EPA will be promulgating a final rule to list additional hazardous wastes from wood treatment operations using pentachlorophenol. The rule will address the use of special technologies to catch drippings to reduce the potential for soil and groundwater contamination.

EPA has issued a test rule for chlorinated and brominated dioxins and furans. The rule requires industry to submit analytical methods that can be potentially used to identify dioxins and related compounds in chemical products. The Office of Toxic Substances is currently reviewing data submissions on chlorinated dioxins.

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