

USEPA
Office Of Water
Health and Ecological Criteria Division
1200 Pennsylvania Ave, NW
Washington DC 20460

Re: Comments on the Notice of Data Availability for Dioxins in Land-Applied Sewage Sludge – Round 2 Part 503

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submitted by

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CHEJ is outraged that the USEPA is proposing to set a limit of 300 parts per trillion (ppt) toxic equivalents (TEQ) of dioxin in land-applied sewage sludge. This value is too high and is totally inconsistent with public health risks defined by the EPA's Office of Research and Development National Center for Environmental Assessment's report on the "Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds, SAB Review Draft September 2000 (1).

Setting a limit of 300 ppt TEQ dioxin in sewage sludge that can be applied to land as fertilizer will legalize the distribution on farmlands and private property throughout the country of one of the most toxic chemicals ever tested. This act is unconscionable and will pose a serious and unnecessary threat to public health and the environment.

According to EPA's draft reassessment of dioxin, the upper bound on the general population lifetime risk for all cancers from exposure to dioxins is on the order of 1-in-1,000. This level is 1,000 times greater than the generally accepted cancer risk of one-in-a-million. The EPA considers dioxin to be a probable human carcinogen. Similarly, the World Health Organization's International Agency for Research on Cancer (IARC) has defined dioxin (TCDD) as a "known human carcinogen" (2) and the National Toxicology Program of the National Institute of Health has defined dioxin (TCDD) as "reasonably anticipated to be a human carcinogen" (3). Furthermore, updates of ongoing studies of cancer rates in dioxin-exposed workers in the U.S. (4), Germany (5,6), and The Netherlands (7) and in residents of Seveso, Italy (8) all indicate increasing cancer rates in the highest exposure groups. These studies provide strong evidence that exposure to dioxins will lead to more people getting cancer.

Using EPA's own risk calculations, the one-in-a million risk level for dioxin in soil is 2 to 4 ppt (9, 10). EPA has used this risk value to derive a residential soil cleanup standard of 200 ppt dioxin (10). This value is equivalent to a risk of 2-in-10,000 and has been used to clean up several Superfund sites. It is outrageous that the agency would consider allowing sewage containing dioxin to be land applied as fertilizer at levels that exceed values that they have used to clean up toxic waste sites. There is no scientific basis to allow levels of dioxin in sewage sludge to be as high as 300 ppt.

In addition, the EPA's draft reassessment on dioxin states that the non cancer effects of dioxin may be more sensitive indicators of dioxin exposures than the cancer endpoints. The greatest impact of exposure appears to be to the growth and development of children. Disrupted sexual development, birth defects, and damage to the immune system may result.

Dioxin exposure has been associated with IQ deficits (11), increased prevalence of withdrawn/depressed behavior (12), adverse effects on attentional processes and an increase in hyperactive behavior in children (13). These effects have been documented in 42-month old Dutch children whose exposure to dioxins and PCBs came primarily before birth. The children's mothers were exposed to "background" levels of dioxins and PCBs as a result of the daily ingestion of dioxin in food.

Dioxin exposure has also been associated with alterations in immune function including increased susceptibility to infections (14) and changes in T-cell lymphocyte populations (14, 15). These effects have been reported in 42-month old Dutch children exposed to dioxins and PCBs primarily before birth. Altered immune function, reported at birth and 3 months of age (16), persists to 42 months of age in these children (14). Reported immune effects include an increase in middle ear infections and chicken pox, and a decrease in allergic reactions.

There is evidence of both developmental and reproductive effects in children exposed to dioxin. These effects include defects in permanent teeth (17, 18, 19, 20), adverse effects on thyroid hormones (21), altered sex ratio (more females than males) (22), and increased respiratory infections (23).

Hormonal effects associated with dioxin exposures in humans include a decrease in testosterone in dioxin-exposed workers (24) and altered glucose tolerance that leads to diabetes. Recent studies of soldiers exposed to Agent Orange (25) and residents of Seveso, Italy (26) add to the existing evidence from studies of workers (27) that exposure to dioxin increases the risk of developing diabetes.

These many noncancer effects were the basis for the Agency for Toxic Substances and Disease Registry (ATSDR) setting a screening level for dioxin in soil of 50 ppt TEQ for chronic exposure of children (28). Dioxin levels in soil that exceed this screening level, called an Environmental Media Evaluation Guide (EMEG), trigger the need for a site-specific evaluation that includes assessing the following factors: bioavailability, ingestion rates, pathway analysis, soil cover, climate, the presence of other contaminants,

community concerns, demographics, and background exposures. If the Office of Water proceeds with its proposed plan, then all sites where dioxin in sewage sludge is applied at levels that exceed 50 ppt TEQ will need to be reviewed as a potential contaminated site according to these ATSDR guidelines. This makes no sense whatsoever.

Furthermore, nearly all Americans are exposed to dioxin through ingestion of common foods, especially meat and dairy products. Dairy cows and beef cattle absorb dioxin by eating dioxin contaminated feed crops. The crops become contaminated primarily by airborne dioxins that settle onto soil and plants. Dioxins enter the air from thousands of sources including incinerators that burn medical, municipal, and hazardous waste, chemical processing facilities that use chlorine to make products such as pesticides and PVC plastic, and metal refining and smelting operations.

The Office of Water is proposing to add a new pathway for dioxins to enter the food chain by legalizing the application of dioxin at levels as high as 300 ppt in sewage sludge as fertilizer. This is like putting poison directly into the food supply of millions of Americans. It is irresponsible for the agency to move forward with a regulation that introduces dioxin directly into the food supply of millions of Americans at a time when every public health agency around the world that has looked at this issue has called for a reduction in general dioxin exposures.

In addition, according to the EPA's draft reassessment of dioxin, the typical body burden level of dioxin found in the general population is very near levels that are associated with adverse health effects observed in human and animal studies. This means that a very small margin of exposure exists between background levels of dioxin found in people and observed adverse health effects. This is another reason why the agency should move forward to eliminate exposure of the general population to dioxins, not increase them. Certainly the agency should not intentionally allow dioxin to be added to the American food supply.

Furthermore, the National Research Council (NRC) of the National Academy of Sciences report "Biosolids Applied to Land: Advancing Standards and Practices," released this past July, specifically concluded that the EPA was using "outdated science" in assessing the health risks of the more than 3 million tons of sewage sludge used as fertilizer each year (29). According to the NRC report, "... there is a critical need to update the scientific basis for the rule to (1) ensure that the chemical and pathogen standards are supported by current scientific data and risk assessment methods and (2) demonstrate the effective enforcement of the Part 503 rule, and (3) validate the effectiveness of biosolids management practices."

What's puzzling is why the Office of Water is ignoring the most extensive health assessment document ever prepared by the EPA. The draft reassessment of dioxin is more than 3,000 pages long. It is the most thorough collection and summary of scientific evidence on the health effects and risks associated with exposures to dioxin ever compiled. This report represents the most current scientific evidence available on the

health effects of dioxins. The Office of Water needs to incorporate this information into its evaluation.

It is irresponsible for the Office of Water to ignore data from the NCEA and to move forward in setting regulations that are based on "outdated science."

The Office of Water should postpone any decision on setting allowable levels of dioxin in land-applied sewage sludge until they have incorporated the most current data on the adverse health effects and associated risks of exposure to dioxins, as presented in the agency's draft reassessment report on dioxins, into their evaluation.

CHEJ hopes that the EPA's Office of Water will listen to advice offered by the NRC to use the most current scientific data on dioxins and look to its own scientists from the NCEA and not move forward with finalizing this regulation until the draft reassessment document on dioxin is complete and the latest scientific evidence on the adverse health effects associated with exposure to dioxin has been incorporated into their evaluation.

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