

W-99-18 NODA Comment Clerk
Water Docket (MC-4101)
USEPA

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Washington, DC 20460

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SUBMITTED ELECTRONICALLY

Re: STANDARDS FOR THE USE OR DISPOSAL OF SEWAGE SLUDGE
(Docket W-99-18)

Dear Presiding Officer:

I, Lynn B. Willett, Professor and Toxicologist in the Department of Animal Sciences, The Ohio State University/Ohio Agricultural Research and Development Center, offer the following comments relating to the abovementioned proposed dioxin standards for sewage sludge. My basis for the forthcoming comments are:

1. For over 30 years, I have been a large animal toxicologist dealing with the toxicity and movement of environmental chemicals to the human food chain via food-producing animals. My research has specifically emphasized polychlorinated biphenyls, polybrominated biphenyls, dioxins, pentachlorophenol, and organochlorine pesticides. This research has resulted in models that can be used to reliably predict the concentrations of chemical residues that are likely to occur in human foods from environmental exposure of livestock to those chemicals.

2. I have read the USEPA Standards for the Use and Disposal of Sewage Sludge (Docket W-99-18), Exposure Analysis for Dioxins, Dibenzofurans, and CoPlanar Polychlorinated Biphenyls in Sewage Sludge (May 2002), as well as the related USEPA draft documents Estimating Exposure to Dioxin-like Compounds; Health Assessment Document for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and Related Compounds; Risk Characterization of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) and Related Compounds; and proposed changes to CFR 40 Part 503, Standards for the Use or Disposal of Sewage Sludge.

3. I have reviewed the Current European Union limits (adopted November 2001) of dioxins and dioxin-like compounds in animal-based foods (IP/02/1698) and animal feeds (IP/02/1670). Further, I am aware that feed ingredients manufactured in the United States have been found to be violative of the European tolerances and were withdrawn from the market.

Specific Comments:

1. I strongly disagree that sewage sludge that may contain up to 300 ppt TEQ should be allowed to move to agricultural land that may be used for the production of forage crops (grazed or mechanically harvested) for the feeding of

livestock used for the production of meat and milk for human consumption. My concern is not of risk of toxic or carcinogenic responses to humans that consume animal products but the potential concern for actionable residues occurring in particularly milk and meat products. It is my opinion that the allowable TEQ in sewage sludge returning to agricultural land for the production of forage crops should not exceed 10 ppt.

2. The USEPA (Risk Assessment Document) has estimated that the US agricultural "background" soil concentrations are 3.6ppt WHO (subscript: PDF)TEQ while "background urban soils are 11.9 ppt TEQ. Based on limited data for segments of Ohio, we find an average of 6 ppt TEQ for agricultural soils is probable.

3. Effective November 2001 the European Union adopted strict tolerances for the presence of dioxins and dioxin-like compounds in food products of animal origin. Typical examples (on a fat basis) include: meat and meat products, 3 ppt WHO(subscript: DF)TEQ; milk and milk products, 3 ppt WHO(subscript: DF) TEQ, poultry, 1 ppt WHO(subscript: DF) TEQ; eggs, 1 ppt WHO(subscript: DF) TEQ; and liver, 6 ppt WHO(subscript: DF) TEQ.

4. Irrespective of whether the extensive equations presented in "Exposure Analysis for Dioxins, Dibenzofurans, and CoPlanar Polychlorinated Biphenyls in Sewage Sludge" or the less complex relationships $[OHC, \mu\text{g/g}]_{\text{milk fat}} = 0.28(\text{daily dose, mg})^{0.82}$ and $[OHC, \mu\text{g/g}]_{\text{adipose tissue}} = 0.16(\text{daily dose, mg})^{0.085}$ are used, even current soil "background" concentrations will produce dioxin concentrations in animal fat (assuming animals are forage fed) that approach or exceed the European tolerances.

5. Standards for allowable concentrations of dioxins and dioxin-like compounds have not yet been established for the United States. One can only hope that more reasonable food tolerances are established. However, 1 ppt "temporary tolerances" for these compounds in catfish and poultry were instituted in this country, in response to a contamination incident. It must also be recognized that producers in the United States will actively trade with Europe, so it is very likely that uniform tolerances will be adopted.

6. If standards similar to those adopted in Europe are imposed in the United States, it will be imperative that "background" exposure to livestock forage feeds be reduced from those that already exist in many sections of the country. Sewage sludge that contains between 10 and 300 ppt would significantly increase exposure to forage crops and increase the probability that livestock and livestock products would be excluded from commerce. Economic losses that resulted when livestock were exposed to other accumulative halogenated compounds have been documented through incidents involving organochlorine pesticides, polybrominated biphenyls, polychlorinated biphenyls, and other

industrial chemicals. The half-life of dioxins and dioxin-like compounds has clearly been shown to be in the range of 25 to 100 years. Therefore, any applications of these compounds associated with applications of sewage sludge may have long-term impact. The application of some sludge materials may permanently exclude some agricultural land from forage production.

I hope that your committee will re-evaluate the proposed standards for dioxins in sewage sludge for application on agricultural and on the basis of actionable residual residues and the associated economic losses that may occur. I commend the committee on the excellent evaluation that concludes that health risks are indeed minimal from most sewage sludge exposure. As is the case with most of the chemical agents that have had "action levels" or "tolerances" established, the economic risk from exceeding the tolerance is far greater than the associated toxic risk.

Sincerely,

Lynn B. Willett, Ph.D.
Professor