

September 6, 2002

W-99-18 NODA
Comment Clerk
United States Environmental
Protection Agency
Office of Water Docket MC-4101T
EPA West Building
1301 Constitution Avenue NW
Washington, DC 20460

Dear Comment Clerk:

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

The Metropolitan Water Reclamation District of Greater Chicago (District) has reviewed the Notice of Data Availability (NODA) on dioxins, dibenzofurans, and coplanar polychlorinated biphenyls (referred to herein as dioxins) in land applied biosolids issued by the United States Environmental Protection Agency (EPA). The District participated in both the 1995 and the 2000/2001 Association of Metropolitan Sewerage Agencies (AMSA) surveys of dioxins in biosolids from member agencies and the EPA 2001 dioxin update survey. The District also conducted additional analysis of dioxins in its biosolids.

The District has observed a decline in the concentrations of dioxins in the biosolids it produced from 1995 to 2001. The results of the 1995 AMSA survey revealed that the District's seven Water Reclamation Plants (WRPs) had a range of dioxins concentrations from 3.7 to 155.3 parts per trillion (ppt) toxic

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

equivalents (TEQ) in their waste-activated thickened biosolids and centrifuge cakes. The District's seven WRPs had a range of dioxins concentrations from 4.93 to 62.9 ppt TEQ in their waste-activated thickened biosolids and centrifuge cakes in samples taken in 2000 and 2001.

The highest concentrations of dioxins in the District's biosolids occurred in lagoon-aged air-dried biosolids produced at two of its WRPs. The concentration range of dioxins in these biosolids for samples taken in 2000 and 2001 was 60.5 to 116 ppt TEQ. The District would easily comply with the 300 ppt TEQ limit being considered by the EPA for dioxins in biosolids.

The EPA is proposing to use the 95th percentile concentration for establishing an arbitrary limit of 300 ppt TEQ for dioxins in land applied biosolids. The District recommends that the EPA should establish the actual risk-based limit for dioxins in biosolids to promote public confidence and accurately frame safe practice. This approach is consistent with the approach utilized in Round One rulemaking, and these limits will be substantially higher than 300 ppt TEQ, which will minimize any unnecessary adverse impacts on POTWs. The District further recommends that the EPA should require only once per five years compliance monitoring for the limit on dioxins in land applied biosolids.

In Section XIII of the June 12, 2002 notice, EPA has requested public comments on 12 items. The District's comments on each of the items in Section XIII are as follows:

1. Request for Comments (Ref: Section V.G.)
The significance of the differences in dioxin concentrations in sewage sludge measured at facilities with wastewater flows greater than 1 MGD compared to dioxin concentrations in sewage

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

sludge at facilities with wastewater flows less than 1 MGD.

District Response

The EPA's logic in exempting POTWs with a flow of less than 1 MGD is perfectly acceptable because they have lower dioxin concentrations than the larger POTWs, based on the 2001 survey results. The 99th percentile concentration of dioxins in biosolids from POTWs with less than 1 MGD flow was only 100 ppt TEQ, which poses virtually no risk. Further, the area of land receiving biosolids from these POTWs is very small. The EPA estimates that POTWs with a flow of less than 1 MGD produce approximately 290 dry metric tons of biosolids or less annually and represent less than eight percent of the total land applied biosolids.

2. Request for Comments (Ref: Section V.H.)

The significance of the differences in dioxin concentrations in sewage sludge measured in the EPA 2001 dioxin update survey compared to dioxin concentrations in sewage sludge measured in the 1988 National Sewage Sludge Survey.

District Response

Clearly, the upper percentile concentrations of dioxins in the 2001 EPA survey were substantially lower than the levels in the 1988 survey. These lower concentrations were obtained with significantly improved sampling procedures and analytical methods than those used in the previous surveys. Thus, this trend implies that the concentration of dioxins in biosolids has declined over the years. The data from the 1994/1995 and 2000/2001 AMSA

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

surveys confirm this trend of decreasing dioxin concentrations over time. Although the AMSA POTWs were not randomly chosen, a statistical comparison of the two AMSA surveys shows that the mean and median adjusted total TEQ had declined between the two samplings. As discussed earlier, results of the analysis of District biosolids produced in 2000/2001 and biosolids produced years earlier, and aged until sampling in 2000/2001, were also consistent with this observation. These observations are very significant because they indicate that the risk from exposure to dioxins in land applied biosolids is decreasing over time, and this provides additional protection to the practice of land application of biosolids.

District Recommendation

The data from sewage sludge surveys conducted over the years by both the EPA and AMSA clearly show a declining trend in dioxins concentrations, which indicates that the risk from exposure to dioxins in land applied biosolids is decreasing over time. The EPA should highlight the significance of these findings to promote public confidence in land application of biosolids and in the regulatory limit that is set for dioxins.

3. Request for Comments (Ref: Section VI.D.)
Choice of the highly exposed farm family as the modeled population for the revised risk assessment and the assumptions related to this choice of modeled population.

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

District Response

The choice of the farm family represents the most exposed segment of the national population, and the EPA has used a very conservative scenario to evaluate the risk of exposure to dioxins in land applied biosolids. It is highly unlikely that the farm family's diet would only consist of vegetables and crops grown on biosolids-amended farmland, and beef, poultry and dairy products from livestock raised on or feeding on the amended farmland. Thus, the EPA's choice of highly exposed farm family and assumptions related to its choice of modeled population represent the worst case scenario. This scenario protects the most exposed rather than the highly exposed farm family, and it provides a very large margin of overprotection to nearly the entire population of the United States.

4. Request for Comments (Ref: Section VI.D.)
All of the assumptions related to exposure, fate and transport used in the revised risk assessment, including the specific assumptions related to the farming and grazing practices used by the modeled farm family.

District Response

The District has not conducted a detailed evaluation of the new risk assessment. However, we believe that the EPA's assumptions for the risk assessment are generally very conservative, representing more of a worst case scenario. For instance, the EPA's reason for the division of farmland into 50 percent for crops and 50 percent for pasture and grazing land on the model farm is not clear. On most farms in

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

the United States the amount of agricultural land dedicated to pasture and grazing is usually less than 50 percent. An assignment of 20 to 30 percent of the acreage for pasture would be more realistic.

5. Request for Comments (Ref: Section VI.E.)
The treatment of non-detects in the revised risk assessment and the effect on estimating risk.

District Response

The EPA indicates that because of the excellent sensitivity and limits of detection achieved by the analytical procedures used in the 2001 survey, the reported TEQ for dioxins in the samples are relatively unchanged regardless of whether non-detects are treated as zero, one-half the detection limit, or at full detection limit. The use of one-half the detection by the EPA is their standard practice and this is certainly acceptable.

District Recommendation

The non-detects should be treated as one-half the detection limit and the EPA should make it a standard practice.

6. Request for Comments (Ref: Section VI.F.)
The assumptions and values used to estimate how much dioxins are being transported to individuals in the modeled farm family (e.g., the sources [store-bought versus farm-produced], types and dioxin contamination levels of poultry feeds.)

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

District Response

The assumptions and risk assessment used to model the transport of dioxins to individuals in the modeled farm family are extensive and conservative. The percentage of store bought chicken feed versus farm produced (90 percent vs. 10 percent) is realistic. However, the assumption that the store bought produce contains lower levels of dioxins may not be true because the concentrations of dioxins in biosolids-amended soils are not significantly different from the concentrations in unamended soils. Further, due to the high biosolids organic matter content, the dioxins in biosolids are likely to be more tightly bound to solid particles and may not be released to the environment to the extent that they might be from unamended soils. Thus, no measurable uptake of dioxins would be expected in above ground crops grown in biosolids-amended soils.

The District conducted a comprehensive study in collaboration with the Wastewater Technology Center, Environment Canada in 1990 and determined that bioaccumulation of PCBs and PAHs in food and feed stuff of crops grown on a coal refuse site treated with large amounts of Chicago biosolids was insignificant. The research was published in the *Journal of Environmental Quality* 23:1019-1026, 1994. One would expect the same conclusion for dioxins.

7. Request for Comments (Ref: Section VIII.A-C.)
The methodology and data used for the screening ecological risk assessment, and the results derived from the screening ecological risk analysis.

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

District Response

The EPA performed a screening ecological risk analysis (SERA) in response to public and peer review comments on the December 1999 Round Two proposal. The use of SERA accomplished what it was designed to do and that is to provide insight into the potential ecological risk of dioxins in land applied biosolids. The approach used shows that the ecological risk to animals in terrestrial and water body margin habitats did not exceed the protective ecological bench mark (HQ) of 1, suggesting that dioxins in land applied biosolids do not pose a serious ecological risk.

8. Request for Comments

The significance of the finding that setting a 300 ppt TEQ limit would make no detectable difference in the risk of cancer to the highly exposed farm family.

District Response

The EPA finding that setting a 300 ppt TEQ limit would allow no detectable increase in the risk of cancer to the highly exposed farm family is only significant in that it indicates that land application of most biosolids (100 percent of those produced by POTWs with flow less than 1 MGD and at least 98 percent of those produced by POTWs with flow greater than 1 MGD), possibly all biosolids, has no significant impact on human health or the environment with respect to dioxins. However, insofar as the 300 ppt TEQ value was derived from the 95th percentile concentration of dioxins in biosolids, as measured in EPA's National Sewage

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

Sludge Survey and AMSA's 1995 survey, it should not be used as the final regulatory limit. The limit should be risk based. This finding should dictate that the final risk based EPA Part 503 limit for dioxins should be no lower than 300 ppt TEQ.

District Recommendation

The 300 ppt TEQ value derived from the 95th percentile concentration of dioxins in biosolids as determined by EPA's National Sewage Sludge Survey is arbitrary and should not be used as the final regulatory limit. To provide public confidence and frame safe practice, the EPA should determine the final regulatory limit for dioxins in land applied biosolids using a risk assessment that is consistent with Round One rulemaking methodologies.

9. Request for Comments (Ref: Section IX)

Taking no action with respect to regulating dioxins for land application.

District Response

Taking no action on regulating dioxins in land applied biosolids is certainly defensible on a scientific basis because of the generally low levels in biosolids and the low risk to humans and animals in impacted areas. The results of the EPA's SERA demonstrate that dioxins from land application of biosolids have no ecological impact. The EPA's estimate of risk from exposure to dioxins in land applied biosolids for highly exposed farm families is approximately 10 times lower than the level of acceptable risk for the general population from exposure to background levels of dioxins in the en-

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

vironment. However, in order to prevent dioxins from becoming an emotional issue with the public and environmental advocacy groups, the District believes that the EPA must set a risk based limit on the levels of dioxins in land applied biosolids.

District Recommendation

The EPA must set a risk based limit on dioxin levels in land applied biosolids for promoting public acceptance and preventing dioxins from becoming an emotional issue with the public and environmental advocacy groups.

10. Request for Comments (Ref: Section IX)
The proposed monitoring schedule and the threshold concentration of dioxin that would allow for less frequent monitoring, and specifically, on whether other schedules which would require more or less frequent monitoring would be more appropriate.

District Response

All POTWs with a flow greater than 1 MGD should be required to monitor their land applied biosolids during the first year that the dioxins limit is promulgated. If the monitored dioxins concentration is below the risk based limit, then the POTWs should be allowed to monitor their biosolids once every five years thereafter. This should be more than adequate monitoring since there is very compelling evidence that the concentration of dioxins in most biosolids has been declining with time since the late 1980s. The POTWs that exceed the risk based limit for dioxins during their initial monitoring should be required to conduct more

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

detailed sampling of their biosolids to determine with a greater certainty that the concentration of dioxins in their biosolids is actually exceeding the Part 503 risk based limit.

District Recommendation

The POTWs with flow greater than 1 MGD should be required to monitor their land applied biosolids during the first year the dioxin limit is promulgated, and they should be required to monitor once every five years thereafter if the monitored dioxins levels are below the risk based limit.

11. Request for Comments (Ref: Section X)
Excluding small entities from the limits for dioxins in sewage sludge to be land applied.

District Response

The EPA risk assessment shows that the risk due to exposure from biosolids produced by POTWs with a wastewater flow of 1 MGD or less is not even 10^{-6} . Further, the 2001 EPA survey indicated that none of the POTWs with flow of 1 MGD or less had biosolids dioxins concentrations over 300 ppt TEQ, which has been demonstrated to pose no additional risk to the farm family. The District recommends that the small entities with flow of 1 MGD or less be exempted from Part 503 dioxins limits, as long as they do not accept wastes from industrial and commercial sources in the future.

District Recommendation

The small entities with a flow of 1 MGD or less should be exempted from the compliance

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

requirements for the Part 503 dioxins limit in land applied biosolids.

12. Request for Comments (Ref: Section XII)

A methodology to assist communities in voluntarily identifying and reducing or eliminating sources of dioxins entering wastewater treatment plants that contribute to elevated levels of dioxins in sewage sludge.

District Response

The EPA proposes two complementary elements to identify sources of dioxins. These are: (1) identification of sources known to be generators or sinks for dioxins utilizing the Toxics Release Inventory data, and (2) finger printing biosolids dioxins by comparing the mix of the 29 dioxins congeners measured in biosolids samples with congeners present in emissions from industries that are known to be sources of dioxins.

These approaches will be expensive. It is not likely that POTWs will be able to bear the costs of monitoring emissions from facilities known to be potential sources of dioxins within their service areas, or of conducting detailed fingerprinting analysis on a sustained basis.

District Recommendation

In summary, the District recommends that the EPA should conduct a risk assessment for dioxins that is consistent with, but updated with respect to the assessment conducted for Round One rulemaking for the Part 503 Regulations. The EPA must not set a limit that is based on distributions of the concentration of dioxins in the nation's biosolids (such as the 95th

Subject: Comments on United States Environmental Protection Agency's Notice of Data Availability, 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge, Federal Register Volume 67, page 40554, June 12, 2002

percentile based 300 ppt TEQ limit). The federal courts have previously determined that the method of setting standards based on the 95th percentile concentrations used in Round One rulemaking was arbitrary and capricious. For chromium and selenium, the EPA was directed to delete the 95th percentile based limits or to replace them with risk based limits for these two metals. The EPA should not utilize such methods again in developing regulations for dioxins in biosolids. Such limits are arbitrary and undermine public confidence in the Part 503 rule by failing to provide scientifically determined "safe" concentrations of dioxins.

If you have any questions concerning our response, please call Dr. Thomas Granato at 708-588-4063.

Very truly yours,

John C. Farnan
General Superintendent

JCF:TG:nu/js

cc: Mr. G. DeMichele
Water Environment Federation

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General Superintendent

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