



# CITY OF PORTLAND ENVIRONMENTAL SERVICES



Columbia Blvd. Wastewater Treatment Plant. 5001 N. Columbia Blvd.. Portland. OR 97203-2098  
(503) 823-2400, FAX 823-2409

W-99-18 NODA Comment Clerk

September 10, 2002

Water Docket (MC – 4101)  
U.S. Environmental Protection Agency  
1200 Pennsylvania Avenue, NW  
Washington, DC 20036

Re: *Standards for the Use or Disposal of Sewage Sludge; Notice of Data Availability; 67 Fed. Reg. 40554 (June 12, 2002)*

Dear Comment Clerk:

Thank you for providing the City of Portland the opportunity to furnish EPA comments on proposed amendments to 40 CFR Part 503, Subpart B related to the regulation of dioxin-like compounds in land applied biosolids.

## **Background**

Currently all biosolids generated by Portland's two municipal wastewater treatment utilities (13,318 dry tons-2001; ? 40% of the biosolids produced in Oregon) are beneficially recycled via land application on untilled dryland pasture in north central Oregon. Solids from both Portland's wastewater treatment facilities were sampled under EPA's 1988 National Sewage Sludge Survey (NSSS). Test data from one plant indicated higher than normal dioxin-like-compound levels (96<sup>th</sup> percentile) than solids analyzed from most of the other 174 sources tested nationally. A representative biosolids sample from that source was also evaluated under EPA's 2001 NSSS. Although dioxin and related compound levels were considerably lower under the 2001 survey, they remain significantly higher than the national mean determined in that survey as well as AMSA's voluntary 2000/2001 survey.

As a consequence of findings revealed via EPA's 1988 NSSS, in 1990, the City of Portland in collaboration with toxicologists from the Oregon State Department of Environmental Quality (DEQ), the Oregon State Health Division, EPA Region X and the City's consultants (Limno-Tech, Inc. and K.S. Crump) conducted a risk assessment of solids processing and use practices. One risk scenario considered Portland's continued application of biosolids to untilled dryland pasture. The risk assessment indicated Portland could maintain this practice provided the dioxin and furan homologue distribution remained relatively uniform; the level of the 17 dioxin-like compounds recognized under the 1989 International scheme remained below 285 ppt TEQ; and a 60 day minimum interval occurred between solids spreading and grazing. These conditions were required by DEQ, Oregon's biosolids regulatory authority, as a provision for the City's continuing its no-till dryland pasture biosolids

spreading operations. As a result, Portland has regularly monitored biosolids dioxin-like compound levels for more than 12 years (Attachment 1). More recently, the City has assessed solids coplanar PCBs levels (Attachment 2).

## Comments

Comments related to proposed 40 CFR Part 503, Subpart B amendments and EPA's June 12, 2002, Notice of Data Availability (*NODA*) follow:

### *General Observations/Remarks*

Based on the *NODA* the City views no mandatory testing for biosolids-borne dioxins by treatment works that treat domestic sewage be required. The revised risk assessment and screening and ecological risk analysis indicate adverse human health and the environmental impacts appear to be negligible. Updated risk assessment data support taking no regulatory action for land applied biosolids dioxins. The *NODA* reflects contemporary biosolids data and related dioxin risk assessment methodology. Based on a revised risk assessment for biosolids land application, the Agency estimated that the relative cancer risk to the most highly exposed individuals, the farm family, is very low, ranging from  $2 \times 10^{-5}$  to  $1 \times 10^{-6}$ , using the current cancer slope factor and concluded the risk to the general public is even lower.

The City of Portland commends EPA on the use of the probabilistic risk assessment method rather than a deterministic approach to establish numeric limits for dioxin in land-applied biosolids. We also compliment the Agency for conducting a screening ecological risk analysis to assess potential adverse impacts that the 29 dioxin and dioxin-like congeners would have on mammal and bird receptors, particularly with respect to the effect that land applied biosolids activities may have where solids are surface applied on pasture. Surface spreading over pasture represents the principal mode of solids recycling in Oregon, and is a widely used practice employed elsewhere in the Pacific Northwest. In addition, recognition of the updated World Health Organization (Van den Berg et al., 1998) scheme for expressing dioxin-like compound toxicity is laudable. Further, dioxin data from EPA's 2001 NSSS is useful in the Agency's determination of possible revisions to existing Part 503, Subpart B regulations.

The decision to regulate dioxins in biosolids must firmly rest in valid data and sound science. EPA's finding that establishing a numerical limit for biosolids dioxin would make insignificant difference in increased cancer risk to the highly exposed farm family, the most at risk receptor from a carcinogenic viewpoint, is particularly noteworthy. Based on the *NODA*, a national dioxin numeric limit for land applied biosolids may be unwarranted. Results from recent EPA and AMSA surveys demonstrate that the average concentration of dioxins in biosolids is relatively low and overall, appear to be declining. Levels in Portland biosolids have also decreased with time (Attachment 1) and were lower in EPA's 2001 NSSS than the Agency's 1988 NSSS.

If EPA elects not to establish a numeric dioxin limit, it is important for the Agency to make it clear to the general public and environmental groups that taking no action on dioxin in land applied biosolids at the national level does not mean that no effort will be made to monitor the presence of biosolids dioxin. Portland and a few other wastewater treatment authorities regularly monitor biosolids dioxin-like

compound levels. Although Oregon DEQ has imposed a regulatory requirement for dioxin in Portland's biosolids, we have voluntarily elected to monitor for dioxins (Attachments 3 and 4) and other pollutants in soils and forage grown on biosolids amended dryland pasture sites as a matter of policy and sound environmental stewardship. This practice is unlikely to change in the event that EPA decides not to regulate dioxin in land applied biosolids.

*Specific comments:*

**Section VI.C.**

EPA's assumption that the farm family is the highly exposed population to dioxins in biosolids seems reasonable since farm families are exposed to biosolids more than the general population and they would be more likely to consume farm grown products that may contain dioxin. However, the basis for establishing a 50 percent consumption rate of products grown by the farm family is obscure? Does EPA have data that supports this assumption? EPA's estimate of the percentage of food consumed by highly exposed farm families, as the modeled population for the revised risk assessment and the assumptions related to this choice of modeled population appear to overestimate exposure and risk. Consultation with the farmer owning the site where Portland biosolids are applied to dryland pasture indicates that a small percentage of his family's diet as well as the diet of his farm workers (less than five percent; 100 pounds meat) originates from the farm. Annually, a few deer that forage on biosolids and nearby non-biosolids amended ground at the farm (up to one deer per family) and one-half dozen pheasants harvested from amended areas are consumed.

**Section VI.E.**

If no numeric standards are established for land applied biosolids, to assure data continues to indicate that no limits need to be imposed, EPA should consider periodically evaluating solids quality via future national solids surveys. Surveys would provide EPA with the latest data on biosolids dioxin concentrations and help provide a means of addressing public concerns regarding solids dioxin. Monitoring guidelines could be established based on past dioxin concentrations if a POTW deems there could be a potential increase of dioxins in biosolids based on changes upgradient from treatment operations. Also, voluntary monitoring can be done by POTWs and data can be provided to EPA upon request (as has been the case between the City and EPA in the past). We encourage EPA to pursue a voluntary monitoring program targeted at facilities that either have elevated biosolids dioxin levels or receive discharges from industries or other sources known or suspected to produce elevated dioxin levels.

EPA should proactively encourage facilities with a history or likelihood of elevated biosolids dioxin levels to monitor solids and investigate possible sources contributing to high dioxin levels. Portland strongly encourages EPA to establish and maintain technical expertise in testing, evaluating and investigating biosolids dioxin sources that could be made available to aid sources requiring assistance in this area. Due to elevated biosolids dioxin levels, Portland recently surveyed dioxin and dibenzofuran levels in suspended solids entrained in influent entering 13 collection system pump stations located downstream from known or suspected dioxin emitting industrial classes. Preliminary findings indicate point source discharges may contribute significantly to the City's biosolids dioxin burden (Attachment 5).

A follow-up survey is planned to confirm and delineate dioxin sources in the future. Expertise from a forensic chemist with expertise in congener pattern recognition and associated generating sources will be used to guide the City in this effort.

### **Section VIII. & IX.B.**

If EPA elects to establish a numeric standard for biosolids dioxin-like compound content (e.g., 300 ng/kg TEQ-WHO<sub>98</sub>), how does it intend to treat spikes in biosolids concentrations (i.e., data which indicates that the biosolids dioxin, dibenzofuran, and coplanar PCBs content of a particular sample exceeds 300 ng/kg TEQ-WHO<sub>98</sub>? In the case of the City of Portland, in its twelve year history of evaluating biosolids dioxins and dibenzofurans and more recent observation of coplanar PCBs levels, it appears a ceiling limit of 300 ng/kg TEQ would have been exceeded during eight of 119 months when representative composite samples were collected and analyzed. The turn-around time between sample collection and the release of analytical results is generally in the range of 60 days. Since the *NODA* suggests the potential impact of biosolids dioxin-like compounds would be negligible, we recommend treatment works that treat domestic sewage which normally produce biosolids that fall within a prescribed regulatory limit (e.g., 95% or more of the time) not be subject to violation or civil penalty under 40 CFR Part 503, Subpart B. Instead, EPA should encourage those treatment works to identify and eliminate dioxins from upgradient sources or activities that are likely to be appreciably contributing to biosolids dioxin burdens.

### **Section IX.B.**

EPA's estimated four and one-half million price tag related to imposing numerical limits on POTWs appears to be too low. If the City of Portland diverted biosolids from its current dryland pasture recycling program to a RCRA Subtitle D regional landfill for codisposal, this means of solids handling would increase expenses by approximately \$3,100,000 annually. Also, the City operates a 37-acre facultative storage lagoon which contains solids dating back to the early 1950's. In mid-2001, lagoon solids quantity and quality were assessed. Approximately 48,000 dry tons solids resided in the lagoon at the time of the survey. Solids averaged 458.49 ng/kg-TEQ (WHO<sub>98</sub>) dioxins, dibenzofurans and coplanar PCBs and ranged from 329.73 to 545.32 ng/kg. Currently lagoon solids are blended with less contaminated, freshly digested contemporary solids prior to their land application. If this practice were discontinued due to regulatory constraints or lagoon reconstruction activities and solids were moved to a landfill, the cost to the City, excluding solids transport, would be in the range of \$11,671,200 (greater than \$9,200,000 more than if solids were land applied). Thus, it appears EPA may have significantly underestimated the cost of biosolids landfilling on a national scale. In addition, Portland's wastewater utilities face mounting financial strain in light of new CMOM, SSO, CSO, and TMDL requirements, aging collection system infrastructure, and other costly issues. The City can not justify spending its resources in areas that do not measurably contribute to bettering the lives and health of its ratepayers.

## Section IX.B.

The *NODA* asserts long-term, month-to-month, variability in biosolids dioxin concentrations indicate these contaminants remain relatively consistent with time and that the maximum monthly concentration was a factor of two to four times the mean concentration for the same facility. In the case of Portland, one of the three utilities that have routinely monitored biosolids dioxin content for several years referenced in the *NODA*, the maximum monthly concentration (based on biosolids dioxins and dibenzofurans content alone) was 4.5 times greater than the mean (498.57 ng/kg TEQ-WHO<sub>98</sub> vs. 109.68 ng/kg TEQ); the minimum monthly concentration was approximately 11.6 times lower than the mean (9.48 ng/kg TEQ vs. 109.68 ng/kg TEQ); and the monthly maximum was nearly 54 times greater than the monthly minimum (Attachment1). These data suggest that biosolids dioxin concentrations may not remain constant with time as stated in the *NODA*.

Portland appreciates the opportunity to comment on the *NODA*. The City has had on-going discussions and shared its means of biosolids dioxin management, State regulatory and permitting requirements, approach to identifying possible sources of dioxins to its collection system (Attachment 6) and monitoring data (Attachments 1 to 4) with EPA (Al Hais, Al Rubin, John Walker, Bob Bastian and Bob Brobst) in the past. We look forward to continued collaborative discussions with the Agency on the management of biosolids-borne dioxins.

If you have any questions about our comments, please do not hesitate to contact me at 503-823-2437 or via email at [markr@bes.ci.portland.or.us](mailto:markr@bes.ci.portland.or.us)

Sincerely,

Mark P. Ronayne  
Biosolids Program Manager

Attachments (6)