Testimony by Andy Harris, Oregon PSR Board member, to Oregon DEQ, 12/06

Oregon PSR requests a public hearing before DEQ renews a permit for the Covanta incinerator at Brooks, OR.

Last year an estimated 94 pounds of mercury were emitted from the incinerator's smokestack. Even very small amounts of mercury can do significant damage. One gram of mercury per year (1/28th of an ounce) is enough to contaminate all the fish in a lake with surface area of 20 acres so that the fish are unsafe to eat. (1) There is so much mercury already contaminating our environment that pregnant and nursing mothers and children are advised to severely limit their fish consumption. (2) (3)

According to the EPA, up to 15% of women of childbearing age are exposed to mercury levels high enough to put their newborns at risk of irreversible neurological and developmental damage. Fetal exposure to mercury can cause mental retardation, learning disabilities, attention deficit, gait disturbances and impairments of language and memory. (4)

The Covanta incinerator imports medical waste from Oregon and Washington and burns about 650 tons of medical waste a year. Medical waste is high in mercury. Most hospitals have phased out mercury thermometers, but many hospitals continue to dispose of mercury laden waste from laboratory chemicals, gastrointestinal tubes, pharmaceutical supplies, and equipment switches.

Medical waste also contains 14% plastics, whereas municipal waste contains half that, or 7% plastics. More importantly, medical waste contains a much higher percentage of polyvinyl chloride, since PVC is used in IV bags, IV tubing, blood bags, collection and specimen bags, anesthesia masks, examination gloves, catheters, feeding tubes, dialysis tubing, sharp containers, bed pans, inflatable splints, and many other uses right down to patient I.D. bracelets.

The heavy metals, cadmium and lead, are common PVC additives, and like mercury, are neurotoxic, especially to fetuses, infants and young children. A recent study suggests that PVC is also a major source of chloronaphthalenes (CNs) and phenanthrenes or/and anthracenes (CP/CAs) formation and release from solid waste incineration. (5)

PVC is 59% chlorine by weight. (6) When PVC is burned in the presence of paper and other organic material, dioxin is produced. How much? According to Russ Johnston, manager of the Covanta facility, 560 mg of dioxin are generated by the Brooks burner unit 1 each year. (7) How much of this dioxin is released into the air? An average of .67 ng/dscm @ 7% O2 (nanogram/dry standard cubic meter of air at 7% oxygen) is released from each of the two burners (data from 1998-2004).

If that amount seems small, the EPA has concluded there appears to be no safe level of exposure to dioxin. (8)

Dioxins are among the most toxic chemicals on earth. Dioxins are Class 1 human carcinogens and according to the EPA, the average American's cancer risk is increased 1000-fold because of dioxin stored in our bodies. Dioxins also cause multiple reproductive and developmental abnormalities. (9) They have been linked to disrupted sexual development, birth defects and damage to the immune system.

Dioxins are extraordinarily persistent in the environment, resisting physical, chemical and biological degradation for decades and longer. Because they are oil soluble, they bioaccumulate in fatty tissue and are found in highest concentrations in dairy products, eggs, meat and fish. Humans are particularly contaminated because of eating at the apex of the food chain. The highest concentrations of dioxins are in human breast milk, and nursing infants take in 10-20 times as much dioxin daily as does the average adult. (10) Worse yet, a nursing mother rids herself of half her body burden of dioxin during six months of breast feeding.

While a health analysis of the incinerator's impact on Marion County residents has not been done, other communities with incinerators have experienced negative health impacts. To cite just several examples: Residents living <1 km from municipal waste incinerators in England were found to have higher rates of stomach, colon, liver and lung cancer than those living further away. (11) Another study in England showed greater rates of stillbirths, spina bifida and heart defects in babies born to mothers that lived near incinerators. (12) In Columbus, OH, children who had lived near an incinerator for at least two years were found to have significantly higher cadmium levels in their hair and increased learning and behavioral problems. (13) Several studies in Japan and Korea have shown that incinerator workers and nearby residents had much higher levels of dioxin in their blood than citizens who worked or lived elsewhere. (14)

At least a few, and possibly many, bioaccumulative toxins that are known to be produced by waste incineration (e.g., polychlorinated naphthalenes and polychlorinated biphenyls) are not measured even once per year.

The new permit appears to make a distinction between rules for emissions during normal operation versus the rules for emissions during the times of upset, startup, or shutdown. Since these latter times are when emissions of many of the toxins are most likely to increase, it seems appropriate that separate emission measurements should be taken at those times. Then those rates of emission can be included in the formula to estimate total annual emissions. Thus, if there were 100 hours of upset during a year, for example, the higher emission levels found in sample tests at times of upset should be used to determine the factor for computing the continuous emission rates for the hours of upset throughout the year. The totals from those hours could then be added to the totals for normal hours of operation to come up with an annual amount of emissions [i.e., (estimated emission rate at upset X number of hours of upset) + (estimated emission rate during normal operation X number of normal operating hours) = total annual emissions].

The parts of the permit that speak of combining the heavy metals (lead, cadmium, and mercury) into one entity (MWC metals) is confusing to members of the public who are trying to understand what gets measured and how it is reported. In one place mercury emissions are reported in isolation, and in another place they are lumped together with lead and cadmium. It is also confusing when intricate mathematical calculations have to be made to transform metric measurements into English measurements or vice versa in order to calculate actual amounts of toxins that are being emitted. It would be very helpful if the permits and the emissions reports were more user friendly in the way issues are presented and more consistent with regard to units of measurement used.

The Covanta incinerator does not exist in isolation from other pollutants in our environment, which may come from as near as dioxins from diesel trucks on Interstate 5, or as far as mercury blowing in from China. DEQ needs to take into account the accumulative effect of toxic releases.

For the health of our communities, and especially our children, Oregon PSR would urge DEQ to hold public hearings before renewing the Covanta incinerator permit. Further, we would urge DEQ to limit toxic emissions from the Covanta facility based on measurements of their actual health and environmental effects, rather than based on "best available control technology."

Thank you for your consideration.

Dr. Andy Harris
Oregon Physicians for Social Responsibility

References:

(1) EPA- http://www.epa.gov/glnpo/bnsdocs/hg/thermfaq.html

(2) 5. EPA, Region 5 Air Toxics and the Great Lake, http://www.epa.gov/reg5oair/glakes/fact2.htm#redbag

What is Wrong With Incineration? Going Green: A Resource Kit for Pollution Prevention in Health Care. Health Care Without Harm, http://www.noharm.org/library/docs/Going_Green_3-2_Whats_Wrong_with_Incineration.pdf

(3) Location of Waterbodies Under Consumption Advisory- EPA www.epa.gov/ost/fish/maps_graphics.pdf

Oregon Fish Advisories http://www.dhs.state.or.us/publichealth/fishadv/docs/fishadv.pdf

(4) In Harm's Way: Toxic Threats to Child Development, A Report by Greater Boston Physicians for Social Responsibility, Jan. 2001, p. 61

(5) Wang et al., 2006. Polychlorinated naphthalenes and other chlorinated tricyclic aromatic hydrocarbons emitted from combustion of polyvinylchloride. J. Haz. Mat. B138: 273-277

(6) Public Health Reports, Hospitals and Plastics: Dioxin Prevention and Medical Waste Incinerators, Vol. 3, July/Aug. 1996

(7) Minutes of SWMAC meeting 4/27/04

(8) Estimating Exposure To Dioxin-Like Compounds, Volume I: Executive Summary, USEPA, Office of Research and Development, EPA/600/6-88/005Ca. June1994 review draft, p. 36.

(9) "Toxicology of dioxins and related chemicals." In Dioxins And Health, Arnold Schecter, ed., NY: Plenum Press, 139-62, as cited in Dying From Dioxin: A Citizen's Guide To Reclaiming Our Health And Rebuilding Democracy, Gibbs, L M and the Citizens Clearinghouse for Hazardous Waste, Boston: South End Press, 1994, pp. 138-139.

(10) Public Health Reports, Hospitals and Plastics: Dioxin Prevention and Medical Waste Incinerators, Vol. 3, July/Aug. 1996

(11) Elliott P. et al. (1996) Cancer incidence near municipal solid waste incinerators in Great

Britain. British Journal of Cancer. 1996 Mar; 73(5):702-10

(12) Dummer TJ, Dickinson HO, Parker L (2003) Adverse pregnancy outcomes around incinerators and crematoriums in Cumbria, north west England, 1956-93. Journal of Epidemiology and Community Health. 2003 Jun;57(6):456-61

(13) Stewart-Pinkham SM. (1989) The effect of ambient cadmium air pollution on the hair mineral content of children. The Science of the Total Environment. 1989 Jan;78:289-96

(14) Takata T. (2003) Survey on the health effects of chronic exposure to dioxins and its accumulation on workers of a municipal solid waste incinerator, rural part of Osaka Prefecture, and the results of extended survey afterwards. Industrial Health. 2003 Jul;41(3):189-96