Briefing to Joint Review Panel on Sydney Tar Ponds Agency's Plans to Use a Temporary Incinerator to Burn 120,000 tons of PCB Containing Sediments from the Tar Ponds and 26,000 tons PAH Contaminated Sediments from the Coke Ovens Site

May 13, 2006

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1. Serious Problems with Rotary Kiln-Secondary Chamber Incinerator Design, Explosions & Fires, Fugitive Leaks, Upset Conditions, Automatic Waste Feed Cutoffs, Trial Burns, Stack Emissions Monitoring, and Similar with Fluidized Bed Design

2. Need for Dioxin Stack Continuous Emissions Monitoring System to Measure Dioxin Stack Emissions during PCB Incineration and PAH Incineration

3. Community Impacts are a chief concern due to close proximity of local community and bioaccumulation potential: No impacts predicted by the risk assessment but the risk assessment is flawed with gaps and overly conservative assumptions

4. No Action Levels proposed for the Sydney Community Health Impacts. Emissions expected from waste disposal removal, handling, transport, and processing operations. Action levels need to be rigorous and set out at minimum for Dioxins/Furans, PCBs, PAHs, Metals, Smoke Particles, HCl, and other air toxics

5. No Air Toxics Ambient Air Monitoring Plan proposed for the local community or environment. Baseline ambient air monitoring program has been conducted. Need to conduct ambient air monitoring and during inversion atmospheric conditions trapping incinerator air pollution that minimizes local dispersion

6. Sydney Tar Ponds PCB Incinerator: Temporary or Permanent Incinerator

Introduction

I am here to brief you on the serious concerns with the incineration technology proposed for the Sydney Tar Ponds PCB cleanup based on my regulatory and technical experiences over twenty-six years, with twelve as a Texas regulator and fourteen with the Sierra Club interacting with state and federal regulatory agencies, communities, environmental groups and industry.

My regulatory background is working as a state air pollution investigator in Texas, with the Texas Air Control Board, where I started inspecting industrial facilities in 1980, including industrial waste incinerators, medical waste incinerators and others to assess their compliance with permit conditions and state laws. I also investigated citizen complaints of nuisance smoke and strong odors causing health effects in the community near the incinerators. Note that public complaints came in on weekends, evenings and normal agency hours (8-5, M-F). A few odor complaints even came from as far away as one mile downwind from the incinerators.

Between 1980 and 1992, I discovered continuing operating problems, gaps in permitting requirements, weaknesses in the permit technical review process, inadequate stack emissions monitoring systems, inherent design flaws, and community health effects associated with waste incineration facilities. Every incinerator experienced problems in the region from one degree to another but all were described as “state-of-the-art” incinerators by their design. By 1989 I was involved in major enforcement cases and lawsuits filed by the Texas Attorney General to obtain corrective measures and continuous compliance. In one enforcement case, workers reported being ordered to overload an industrial incinerator and damaging the hydraulic loading system, melting the electrical wiring and other damage. The incinerator had to be shut down because it could not comply with permit requirements and was severely damaged.

Short List of Incinerator Operating Problems Observed as a Texas State Regulator:
- Repeated high smoke incidents from the exhaust stack in violation of permit opacity limits;
- Repeated nuisance smoke and odors from stack emissions in violation of the permit;
- Temperature control problems and failure to comply with temperature permit requirements;
- Internal damage to primary and secondary combustion chambers such as the refractory lining;
- Structural damage to the steel shell of the incinerator such as warping, buckling and cracking due to severe overloading and overheating;
- Damage to the hydraulic loading system from waste overloading;
- Damage to the electrical control system so the electrical wiring was melting from overheating;
- Damage to the sensors and monitoring system resulting in inaccurate readings;

● Failure to conduct a proper startup of the incinerator before waste fed into primary chamber;
● Failure to properly maintain and repair incinerator as required by permit;
● Failure to maintain a proper supply of natural gas to the combustion chambers as required;
● Operator errors in different phases of incineration operations;
● Failure to promptly report incinerator upset conditions as required by law.

1. Serious Problems with Rotary Kiln-Afterburner Incinerator Design, Explosions & Fires, Fugitive Leaks, Upset Events, Automatic Waste Feed Cutoffs, Trial Burns, Stack Emissions Monitoring and Similar Issues with a Fluidized Bed Design Incinerator

In 1990, a joint task force of the federal U.S. Environmental Protection Agency (EPA) and Occupational Safety and Health Administration (OSHA) conducted 62 unannounced inspections at 29 hazardous waste incinerators, in theory the most regulated, permitted incinerators in the U.S. Inspections at sixty-nine percent (20 of the 29 incinerators) found violations. The task force report, released May 23, 1991,[1] describes 320 OSHA violations (214 of which were "serious", meaning 'violations for which there is a substantial probability that death or serious physical injury [to a worker] could result from the existing condition') and 75 violations of EPA regulations. In addition to the 75 EPA violations, EPA inspectors noted "a significant number of emergency waste feed cut-offs and emergency by-pass openings".

In theory, a hazardous waste (HW) incinerator is designed to continuously burn waste if operating properly but equipment can fail and problems occur, especially as the unit ages. Waste feeds into the primary combustion chamber through a loading system (pipe or a conveyor). One batch of waste enters the chamber followed shortly by another batch and then another. As each batch of waste enters the rotary kiln or primary burn chamber, the incinerator needs to be controlled manually or by computer to do the most efficient job to destroy the waste. If the conditions in the rotary combustion kiln are not controlled properly for the waste batch entering, the operator or computer is supposed to quickly cut off the waste feed to stop the next batch -- called an automatic waste feed cutoff (AWFCOs). When the waste feed moving on the conveyor is suddenly stopped, this is evidence that something is out of proper balance to operate safely and efficiently such as temperature drop, pressure drop, oxygen drop or other problems. The incinerator is not being operated as well as possible.

Sixty-six percent (19 of the 29 HW incinerators) experienced waste-feed cutoffs during a 30-day period monitored by EPA in 1990. One large incinerator complex, permitted with four separate HW treatment units, experienced 13,325 waste feed cutoffs--more than 13,000 instances in which the machine was badly out of adjustment in one 30-day period; this facility averaged 3,331 AWFCOs per unit or 111 AWFCOs per day in each unit. Four other HW incinerators experienced 1800 cutoffs, 1386 cutoffs, 943 cutoffs, and 900 cutoffs in a 30-day period.

Similar to the above hazardous waste incinerators, the Sydney Tar Ponds Agency plans to use a high temperature incinerator for destruction of PCBs, but the plans raise serious public health issues associated with the known hazards of PCB waste incinerators. The theory of incineration as “a proven technology” is extensively contradicted by the serious problems cited in the 1991 EPA/OSHA report and numerous other well documented failures that have plagued many state-of-the-art incinerators, including U.S. EPA Superfund incinerators and hazardous waste incinerators. The 1991 EPA-OSHA report did not even include several newer bad incinerators.

One Superfund Dioxin incinerator permanently shutdown in 1994 due to major problems after a little more than one year of operation was the Vertac site in Arkansas.[2] The Vertac incinerator burned dioxin-contaminated waste in a residential neighborhood of Jacksonville, Arkansas. Dioxin residues were left over from Agent Orange (2,4,5-T) herbicide chemical plant in which dioxin was a contaminant in the herbicide synthetic process. Vertac was not listed in the 1991 EPA report because it was not up and running in 1990 during the EPA-OSHA inspections.

Due to the design and operation of modern state-of-the-art incinerators, they are prone to experiencing serious operating problems and catastrophic failures and significant toxic air pollution releases associated with the following kinds of events:

A. <u>Explosions and Fires in the Combustion Units</u> (Rotary Kiln and Afterburner/Secondary Chamber) due to lack of maintenance & repairs, damage to refractory and the kiln’s external shell, serious leaks, blockages, overloading, failures and others. Fires in other plant equipment. Many incinerators have reported serious explosions and fires. Examples include the following which raise serious concerns about the off-site health impacts from fires and explosions:

** The Chem Security’s Swan Hills PCB incinerator in Alberta had an explosion during incineration of PCBs and released unburned PCBs into the environment.[3] Elevated PCB levels showed up off-site indicating that PCBs escaped from the site. The incinerator was shut down.

** Chemical Waste Management’s two commercial hazardous waste incinerators at Chicago and Sauget, Illinois had explosions, leaks, spills and releases in the 1980s.[4] Reports indicate that during the explosion at the Chemical Waste Management incinerator facility in Chicago a cloud of smoke migrated off-site which indicates that there may have been off-site impacts as a result of that incident.

** An explosion occurred at the ThermalKEM hazardous waste incinerator in Rock Hill, South Carolina on December 8, 1988.[5]

** A serious fire accident occurred in 1991 at the state-of-the-art Rollins Environmental Services hazardous waste incinerator in Deer Park, Texas.[6] At Rollins, a catastrophic fire burned and totally destroyed the entire Air Pollution Control System due to a water pump power failure and 100% water spray loss to the quench system, resulting in the fiberglass quench vessel catching fire. Explosions and fires will release toxic chemicals into the local community and environment. These are just a few examples of incinerator explosions and fires.

** Fire at the ENSCO (Environmental Systems Co.) PCB-HW incinerator at El Dorado, Arkansas prompted an evacuation of about 50 people. On August 16, 1990, a fire "aboard a trailer carrying varied types of hazardous waste" at Ensco's hazardous waste incinerator site necessitated the evacuation of after midnight on August 17.[7]

** Hazardous waste incinerator explosion reported January 25, 1992 by Dow Chemical at its Midland, Michigan chemical plant.[8] A second hazardous waste incinerator explosion reported on February 4, 1993 by Dow Chemical, Midland, Michigan chemical plant.[8]

** July 21, 2003, Citing History of Explosions, Releases of Poisonous Gases and Injured Workers, citizens are opposing renewal of a RCRA permit at the Onyx Environmental Services E. St. Louis hazardous waste incinerator.[9, 10] "Watchdogs Urge Regulators to Close Toxic Waste Incinerator". News release: Chicago, IL East St. Louis - Sierra Club, American Bottom Conservancy and Metro HOPE called on State and Federal officials today to deny new air pollution permits to a Sauget toxic waste incinerator and to shut the facility down. The environmental and watchdog groups pointed to a dismal twenty-year safety record that has included multiple incinerator explosions and dozens of other violations that have repeatedly released clouds of poisonous gases into the St. Louis metro area and even hospitalized workers.

** Two incinerator explosions in one unit were reported March 31, 2006 in Nairobi, Kenya.[11]

Clearly the major public health concern with explosions, fires and catastrophic incidents is the significant release of unsafe quantities of highly toxic air pollutants containing PCBs, Dioxins, Furans, PAHs, fine smoke particles, hydrogen chloride gas, and unknown toxic substances.

B. <u>Fugitive leaks of incompletely burned toxic gases pose serious health concerns from the rotary kiln and afterburner</u>, which at the Sydney Tar Ponds incinerator will contain PCBs, Dioxins, Furans, PAHs, Acid Gases like HCl and other products of incomplete combustion. An example of fugitive leaks are kiln puffs when the rotary kiln loses negative pressure and leakage occurs at the kiln seals, more so if repairs or replacement needed because they begin to leak toxic gases seen as visible smoke. The Vertac Dioxin incinerator had 43 recorded kiln puffs in the logs from operator observations when they could easily see visible emissions of smoke leaking from the incinerator's exterior surface.[2] Fugitive leaks become an increasing problem as an incinerator ages in weeks, months and years of waste operations under severe stress, heat and pressure.

A U.S. public health agency, the Agency for Toxic Substances and Disease Registry (ATSDR), issued an expert panel report in 1993 on the public health implications of the treatment and disposal of PCB contaminated waste. The ATSDR expert panel report states: “Fugitive emissions at the incineration facility can occur during the transfer, processing, and storage of wastes. These emissions may exceed the emissions from the incinerator stack”. p. 3-15, [12] Another concern about fugitive emissions is they are more characteristically leaked close to ground level compared to stack emissions and toxic fugitive gases and smoke will drift off-site along ground level in high concentrations. The ATSDR report emphasizes that “because fugitive emissions are typically released near ground level, they may be more of a health concern than stack emissions for workers and nearby residents”. p. 3-15, [12]

Incinerator workers are at a special risk of exposure to fugitive gases like PCBs and Dioxins since they are working immediately next to and around the incinerator itself and fugitive leaks will have the highest concentrations closest to where the workers are walking during daily inspections of the incinerator facilities. As a result, several members of the ATSDR expert panel “...recommended medical monitoring of incinerator workers, including establishing background values before workers begin employment at the incinerator.” p. 3-15, [12]

C. <u>Fugitive leaks of poorly controlled waste gases from the Air Pollution Control System</u>, which in this case could be Hydrogen Chloride gas (HCl), an extremely harmful acidic air pollutant. Other pollutants could leak such as Dioxins, Furans, PCBs, PAHs, and other toxic pollutants as fine smoke particles and gases. The Vertac incinerator leaked corrosive hydrogen chloride gas and liquids routinely resulting in serious damage to the incinerator’s exterior metal surface.[2]

How badly rusted did the Vertac incinerator appear?

Jacksonville, Arkansas resident Sharon Golgan showed me her photos of the Vertac incinerator in 1994 and the incinerator appeared to be severely rusted on the exterior surface of the rotary kiln, secondary combustion chamber, quench tank, scrubber, baghouse, and the exhaust stack. She was curious about the severe rusting appearance of the entire incinerator. The Vertac incinerator reminded me of a similar severely rusted fertilizer plant I used to inspect, the Permian Chemical Company, in Odessa, Texas that routinely leaked illegal levels of hydrogen chloride waste gas and liquid during production of potassium sulfate.

Vertac’s HCl emissions impacted the Jacksonville neighborhood because the fence (in photos and personal observations during a site visit in 2002) along the incinerator’s property line was badly corroded by the HCl fugitive leaks indicating that acid gas emissions were escaping beyond the plant, and nearby residents complained of corrosion effects to metallic items on their properties. Certainly a portion of Vertac’s off-site HCl corrosion effects may have been contributed to by the stack emissions drifting down to ground level.

D. Dump Stack-Bypass Vent Openings (i.e., thermal relief vent) - which in this case bypasses the entire air pollution control system releasing unacceptable volumes of Hydrogen Chloride gas, Dioxins, Furans, PCBs, PAHs and visible smoke emissions.

The Risk Assessment for the proposed Sydney Tar Ponds (STP) PCB incinerator uses an assumption of only one bypass per month that lasts one minute. But a number of incinerators reported 10X as many bypasses per month over many months and bypasses lasted 10X-100X longer than one minute. I don't regard a one bypass per month scenario as conservative at all or the extremely short bypass time duration considering evidence from other large incinerators.

For example, the Vertac incinerator recorded 155 bypasses to the dump stack in 15 months for an average of 10 per month (10X higher than STP) in 1993-94 and one bypass every 43 hours of incineration.2 Many bypasses lasted for minutes and a few up to an hour or more.

Chem Security's state-of-the-art Swan Hills PCB incinerator had 8 continuous hours of bypassing the air pollution control system, which is 480X longer than assumed for the most conservative case for the propose Sydney Tar Ponds PCB incinerator.3

A review of the logs of ThermalKEM's hazardous waste incinerator in Rock Hill, South Carolina revealed 94 bypasses in 1989 and 151 bypasses in the first nine months of 1990 for a total 245 bypasses in 21 months or 11 per month (11X higher than STP).5 Many bypasses lasted longer than one minute.

Based on these incinerator examples with 10X as many bypasses experienced and for much longer periods of time than one minute, the Sydney Tar Ponds PCB incinerator's risk assessment appears to be overly conservative and needs to be more reasonable in terms of the assumptions for the incinerator's operations. The one minute number sounds like it was pulled out of a hat rather than being a sound assumption for the worst case bypass event time.

A crucial question for local residents to ask is - how many dump stack openings is acceptable to safeguard public health and the environment in Sydney from the incinerator's toxic air emissions? None, in my opinion, but incinerator design and operations typically result in dump stack openings for various periods of time while some can last many minutes to an hour or longer.

A final public health concern with the dump stack openings is two serious issues they pose that have been heavily down played and glossed over in the risk assessment for the project:

● One is that the typical dump vent stack like the one proposed for the Sydney Tar Ponds PCB incinerator will not possess any kind of Air Pollution Control System to act as an emergency backup safety control system to prevent the release of unsafe volumes of highly toxic emissions of unburned PCBs, Dioxins, Furans, PAHs, toxic smoke particles, Metals and Acid Gases. While the bypass vent stack is technically considered as an emergency safety device, it utterly fails to safeguard public health in Sydney and the agricultural region.

● Secondly is the fact that the dump vent stack possesses no Air Pollution Monitoring Devices of any type to track the volumes of toxic air pollution being emitted into the local air supply and environment. Without such air monitoring devices, it's impossible to estimate what the actual emissions are and their concentrations into the ambient air. The incinerator operators will not have a clue as to what was emitted or how much and that's horrible public policy in my opinion.

What will be the health impacts to local residents in Sydney from dump stack incidents?

Bypass dump stack releases are certainly one of the most dangerous aspects of incinerator operation and it will be especially dangerous for a PCB incinerator.

E. High numbers of Automatic Waste Feed Cutoffs due to rotary kiln or afterburner problems, temperature bounces, low oxygen, overloading the kiln, loss of negative pressure, false sensor readings, and many other reasons. Vertac recorded more than 32,000 AWFCOs or one every 12 minutes of operation over 15 months due to serious operational problems and operator errors.2 Vertac averaged 70 AWFCOs per day and 2,100 per month.2   The Vertac average is similar to the eight other HW incinerators inspected by U.S. EPA for 30-days in 1990 that experienced an average of 2,159 AWFCOs per unit that month. How many AWFCOs are upset conditions?

F. Air pollution control equipment malfunctions and failures - Upset conditions include assorted problems in the back part of the incinerator at the Air Pollution Control System and the ID fan as well as the front part in the waste feed loading system, primary and secondary combustion chambers. Emissions from upset conditions can exceed the permit maximum allowable rates. Emissions during upsets was highlighted in 2000 by the U.S. National Research Council's Waste Incineration & Public Health.   The Council includes high emissions during upsets in its "Recommendations ... In monitoring for compliance or other purposes, data generated during the intervals in which a facility is in startup, shutdown, and upset conditions should be included in the hourly emission data recorded and published. It is during those times that the highest emissions may occur, and omitting them systematically from monitoring data records does not allow for a full characterization of the actual emissions from an incineration facility." p. 9 13

G. Toxic Ash Issues -The risk assessment for the Sydney Tar Ponds PCB incinerator paints a rosy picture of no mercury exiting the exhaust stack because it will all be captured with the fly ash and a tiny portion in the bottom ash. Mercury is a highly volatile metal and other incinerators use an air pollution control device to control for mercury and still mercury stack emissions occur. The problem with this conservative assumption of zero mercury emissions is that once the first major bypass upset event happens in either the front end of the incinerator or the tail end, mercury emissions will likely exit the dump stack into the environment. This assumption is not realistic. For example, the ATSDR's expert panel report points out that "When the emergency vent allows the flue gases to bypass the APCE, the public could be exposed to higher concentrations of metals, particulates, acid gases, and organic chemicals."
p. 3-16, 12

During bypass events, metals will escape out the dump stack which has no monitoring systems typically installed to track emissions and smoke. Metals will accumulate in the bottom ash and
the ash may still be toxic to partially hazardous depending on the metal concentrations.

The Vertac incinerator's ash was so contaminated with dioxins and other toxic products of incomplete combustion from its poor operations after 15 months of incineration that it was still considered harmful and all of the ash had to be treated as a hazardous waste and was buried in an onsite landfill.2

"Approximately 6,300 drums of contaminated ash (from the incineration) are buried on the Vertac site along with the incinerator itself and contaminated dirt from two landfills. The EPA buried [contaminated] soil with as much as 5 parts per billion (ppb) of dioxin."14

The Vertac incinerator itself was also so heavily contaminated with dioxins, furans and other toxic chemicals that the entire incinerator had to be buried onsite as well.2

Approximately 34,000 drums of contaminated salt shipped off to Colorado landfill as another example of toxic chemicals not being completely destroyed and salt from the acid gas being contaminated.

The Sydney Tar Ponds incinerator ash is likely to be toxic due to the metal concentrations and potentially from unburned PCBs and Dioxins collecting during upset conditions and malfunctions; Dioxins and PCBs may enter the ash even during normal operations if there are low temperature conditions or low excess oxygen levels to prevent complete combustion.

Mercury monitoring of the stack emissions needs to be performed to determine the actual concentrations of mercury being emitted into the environment. Hazardous waste incinerators emit mercury although with MACT controls a 90% reduction has been achieved.

H. Incinerator Corrosion Damage resulting in serious rusting to the exterior metal areas of the incinerator caused by excessive hydrochloric acid gases and liquids leaking out of the acid gas scrubber and fugitive leaks from the rotary kiln and secondary chamber. The Vertac incinerator was heavily rusted in about 15 months of operations (65% up time).2 Major acid gas releases and subsequent corrosion damage may severely impair the incinerator.

I. Serious equipment & electrical failures which may led to dump stack openings and uncontrolled pollution releases. Electronic glitches may give inaccurate readings of the system's performance, etc.

J. Sensor malfunctions & sensor erroneous readings which results in operator errors, fugitive leaks, higher than permitted toxic air pollution releases, loss of negative pressure and other.

K. Trial Burn Flaws Led to Under Estimating the Health Risk from Incinerators

Having worked as chief of a regional stack testing program performing stack sampling and conducting dozens of stack test observations for more than a decade at industrial facilities, I am well aware of the following flaws in Trial Burn protocols including but not limited to:

● Stack testing during Trial Burns typically sample very small amounts of the stack's air pollution or less than 1% of the total stack and particulate matter available in the exhaust stream. Sampling rules require taking a sample that is calculated as "isokinetic" which is sampling the proper portion to be valid. But small sampling errors and minor deviations across the stack diameter can significantly skew the final data calculations especially for dioxins which tend to occur in extremely low concentrations. The end result is it's easy to under sample and under estimate the quantity of stack dioxin emissions. Also see Costner and Thornton's report.15

● Trial Burns are deficient tests, snap shots at best, because they are performed under idealized conditions that are not truly representative of overall incinerator operations, whether during normal or upset conditions. For example, trial burns are not as a rule conducted during incinerator malfunctions and abnormal operational events when toxic air emissions can be far greater than during normal operations by a factor 10X-50X or more. Based on my regulatory experience, one major incinerator upset event can easily produce emissions volumes that exceed the annual maximum allowable limitation for that pollutant such as dioxin, particulate matter, mercury and others. But if a major upset event happens that could cause higher emissions or abnormal conditions anywhere in the incinerator with a potential of higher emissions, the Trial Burn will usually be terminated as quickly as possible and started over. So we do not have emissions data generally available from major incinerator upset events except for what is seen by the stack air pollutant monitoring systems on mainly the criteria pollutants such as Opacity (a surrogate for PM), Carbon Monoxide, Nitrogen Oxides, Sulfur Dioxide, and total Hydrocarbons. HCl stack gas may or may not be monitored but today it is usually required to be continuously stack monitored since the HCl CEMS are available for site certification.

● Trial Burns use surrogate chlorinated chemicals to burn for short periods of time to measure destruction efficiency when they are not the actual chlorinated chemicals like PCBs being destroyed. The volumes of surrogate chemicals used in the Trial Burn may vary significantly from the PCBs both in volume, chemistry, oxygen and residence time requirements.

● Trial Burns do not sample the stack gases and particulates long enough to account for all the dioxins and furans that are produced; dioxins and furans can continue to be emitted even after the stack testing is completed and it's known as the Hysteresis effect of additional dioxins and furans being emitted after the Trial Burn is concluded. See Thornton and Costner's report.15 Trial burns typically are a failure by not requiring a Mass Balance of 100% of chlorine going into the incinerator compared to 100% of chlorine exiting the incinerator.

L. Affidavit of former U.S. EPA Regional Administrator Adlene Harrison on Siting of PCB and Hazardous Waste Incinerators

The affidavit of retired U.S. EPA official Adlene Harrison supports the position that PCB and hazardous waste incinerators should not be sited near populated communities like Sydney nor sited in prime agricultural areas where food is being raised or fish being caught. In her February 4, 1993 affidavit, Adlene Harrison states that she served as the Regional Administrator, the chief regulator, for the U.S. Environmental Protection Agency, Dallas, Texas, EPA Region 6 from 1977-1981. During this period, Adlene Harrison was the EPA Regional Administrator who gave the final approval on permits for PCB and hazardous waste incinerators in states under her jurisdiction in Texas and Arkansas. See attached copy of complete affidavit.16

She states in excerpts from paragraphs 2, 3, 4 and 5 of the affidavit:

2. During my tenure at U.S. EPA as Region 6 Administrator, I was called upon to make some difficult decisions including whether or not to permit PCB and hazardous waste incinerators in states in my Region, including Arkansas and Texas.

3. As a result of the passage of the Toxic Substances Control Act (TSCA) in 1976 which largely banned use of the chemical PCB, there was strong political pressure on EPA to find some method for disposing of great quantities of highly toxic PCBs. I eventually approved PCB incinerators in Arkansas and Texas, but not without extensive investigation and serious reservations. Region 6 was the first Region to approve a PCB incinerator.

4. I would not make the same decision today. I have since come to the conclusion that incinerators of PCBs, Dioxin, and hazardous wastes, if such incinerators are to be used at all, should not be located in populated areas nor should they be located in areas where farming is done, where livestock is raised, or where they might otherwise contaminate the food chain. I reached this conclusion prior to reviewing any of of the materials regarding the WTI hazardous waste incinerator in East Liverpool, Ohio. My opinions were reported in the Arkansas Democrat-Gazette on December 16, 1990.

5. I have reviewed the EPA's inhalation risk assessment for the WTI incinerator in East Liverpool, the EPA 1992 report Estimating Exposures to Dioxin-Like Compounds, and affidavits of certain scientists supporting Greenpeace's position. These materials confirm my previous concerns and opinions that hazardous waste incinerators should not be located near populated areas nor near food producing areas.
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Recommendation on 1.:
Incineration technology is a serious failure as a waste treatment technology based on information from inspections of incinerators and data on emissions of toxic air contaminants. Alternative treatment technology was approved for PCB disposal in 1994 by the U.S. EPA for the first time utilizing a non-incineration method patented by Commodore that used a room temperature metal catalyst to neutralize the PCBs without thermal combustion or producing emissions.

2. Need for Dioxin Stack Continuous Emissions Monitoring System to Measure Dioxin Emissions during PCB Incineration

No Dioxin Stack Continuous Emissions Monitoring System (CEMS) has been proposed for the Sydney Tar Ponds Agency’s PCB incinerator for daily incineration operations and the excuse is evidently that it might be too costly. But it’s not too costly in Europe!

For the past 13 years since 1993, Dioxin Stack CEMS have been installed and continuously operated in Europe at hazardous waste incinerators and other European incineration facilities since it’s confirmed as economically practicable to install and operate the monitors and it’s also fully approved as technically feasible for dioxin measurement in the main exhaust stack.17, 18, 19

By 2001, at least 9 Dioxin Stack Continuous Monitoring Systems have been either tested or installed in Europe at the seven following types of waste facilities: 17, 18, 19

** one Dioxin CEMS at a rotary kiln hazardous waste incinerator in Vienna, Austria in 1993;

** one Dioxin CEMS at a fluidized bed wood waste incinerator in Briton, Germany in 1994;

** second Dioxin CEMS at a rotary kiln hazardous waste incinerator in Vienna, Austria in 1995;

** one Dioxin CEMS at a fluidized bed sewage sludge incinerator in Vienna, Austria in 1995;

** second Dioxin CEMS at a fluidized bed wood waste incinerator in Brilon, Germany in 1996;
** one Dioxin CEMS at a municipal waste incinerator in Iserlohn, Germany in 1997;
** one Dioxin CEMS at a fluidized bed trial incinerator in Vienna, Austria in 1999;
** one Dioxin CEMS at a fluidized bed rotary kiln hazardous waste incinerator in Rotterdam, The Netherlands in 2001;
** one Dioxin CEMS at a fluidized bed sewage sludge incinerator in Vienna, Austria in 2001.

Westech and associates have received the European Union's award of an MCERTS Certificate for the Dioxin Monitoring Systems Model G20 Continuous Isokinetic Sampler for Dioxins (CISD). The certification was granted on October 7, 2005 by the European Union's Environmental Agency and MCERTS is known as the "Monitoring Certification Scheme." The Dioxin Stack CEMS is produced by Westech Instrument Services in conjunction with Apex Instruments Inc. USA.17, 18, 19

Westech's information states that the Dioxin Stack CEM sampling system is "...designed for continuous monitoring / surveillance for a wide range of process types during 100% of the plant operation. Conforms to EN 1948-1 dilution method..." (note this is the European Standard for the measurement of dioxins) and the monitor also meets the requirements of U.S. EPA Reference Method 23 required in the U.S. for dioxin measurement. Dioxin stack measurements can be performed for monthly mean values or for minimum 6-hour sample periods.17, 18, 19

Dioxin will be produced by the Sydney Tar Ponds PCB incinerator and needs to be continuously measured during all daily PCB sludge incineration to more accurately assess its destruction efficiency and calculate actual stack dioxin emissions. Note that dioxin fugitive leaks from different components of the incinerator may be more difficult to track since more dioxin monitoring would need to be conducted at ground level and evidently none has been proposed. If the Sydney Tar Ponds Agency wants to protect public health and have credibility with the public, dioxin needs to be continuously monitored in the stack emissions.

It's unacceptable public health and environmental protection policy to perform sampling and analysis for dioxin only during the Trial Burn with a PCB incinerator that will be operated for up to five years because the Trial Burn only measures the dioxin for a few hours of idealized operations and even Trial Burns do not collect 100% of the dioxin formed during the tests.

Dioxin is one of the single most critical pollutant parameters to continuously monitor in the stack emissions and as an indicator of the PCB destruction rates; if the concentration of dioxins increase during PCB incineration, then it's likely that PCBs are not being completely destroyed and undetected problems may be occurring in the incineration process. State-of-the-art incinerator technology produces dioxins and dioxins need to be continuously monitored to determine what concentrations are being produced and released.

Recommendation on 2.:
Require a Dioxin Stack CEMS to be purchased, installed and operated continuously during all Sydney Tar Ponds PCB incineration and other waste incineration activities. If you are not continuously measuring stack dioxin emissions, you are not doing your job of running a PCB incinerator because you are ignoring the most toxic contaminant being emitted.

3. Community Impacts are a Chief Concern due to Close Proximity of Local Community and Bioaccumulation Potential: No Impacts Predicted by the Risk Assessment

As the information presented here suggests, the risk assessment appears to contain a number of serious flaws, gaps and overly conservative assumptions such as predicting that there will be no health impacts on local residents. Because incinerators are flawed by their design and become worse with several years of wear and tear on the equipment, it's absurd to suggest that the incinerator will operate so perfect that everything will work 100% as designed and as efficiently as possible to present toxic releases, which is not the case with most large incinerators of the size proposed by the Sydney Tar Ponds Agency. The reality is incinerators are far from perfect machines and systems.

The U.S. National Research Council's reports clearly emphasizes: "Pollutants emitted by incinerators that appear to have the potential to cause the largest health effects are particulate matter, lead, mercury, and dioxins and furans." p. 6

4. No Action Levels Proposed for Community Health Impacts. Emissions Expected from Waste Disposal Removal, Handling, Transport, and Processing Operations.

The Vertac Dioxin Superfund state-of-the-art incinerator in Jacksonville, Arkansas operated so poorly that it was permanently shutdown after just over one year of operation and its frequent high levels of toxic releases resulted in dioxin contamination in the blood of the Vertac incinerator workers and local residents; the releases were attributed primarily to the thousands of upsets and failures when it was operated.[2] Yet U.S. EPA regarded the Vertac Superfund incinerator as a state-of-the-art facility by design. Many incinerators have caused major concerns for local residents, which I discovered working as a state regulator in Texas.

It would be a serious mistake of judgment and a negligent public health protection approach for the Sydney Tar Ponds Agency to avoid setting pollutant action levels in the Sydney community, especially in view of the toxicity of dozens of pollutants that will be released from the waste disposal removal from the tar ponds, the handling, transport and processing at the incinerator. The sheer potential for hundreds of upsets, malfunctions, breakdowns, bypasses and other accidents must not blind officials with the Sydney Tar Ponds Agency to the need to protect public health when toxic chemical releases occur.

5. No Air Toxics Ambient Air Monitoring Plan Proposed for the Local Community or Environment. Baseline Ambient Air Monitoring Program has been Conducted. Inversions.

Air toxics ambient air monitoring is important to measure the impacts that will occur in the local community since incinerators, especially since the large Sydney Tar Ponds PCB incinerator, will emit dozens of toxic air contaminants such as an array of PCBs, Dioxins, Furans, PAHs, Acid Gases, Metals and a portion of this pollution will settle in the local air supply. Air monitoring needs to be performed for the range of air contaminants released by the incinerator:

The ATSDR expert panel's report on PCB contamination sites states: "Ambient air monitoring at the fenceline and on-site monitoring in work areas is recommended to ensure that workers and the community are protected from fugitive emissions." p. 3-15, 9

During excavation of the Sydney Tar Ponds PCB remediation site, "fugitive emissions are potentially a major health concern and may require special design and operating considerations if residences are close to the site." p. 3-15, 9 Residents of Sydney live in close proximity to the PCB cleanup site and sludge removal areas. Ambient air monitoring is needed.

One of the critical monitoring needs that has been completely neglected is a rapid response plan for local PCB monitoring and sampling in case of an accident at the PCB incinerator. PCBs need to tested in potentially exposed residents as soon after an accident has occurred to more precisely measure the blood levels of PCBs, since PCBs will bioaccumulate and blood levels will be lower if the monitoring is performed too long after an accident.

The Alberta Swan Hills PCB incinerator had an explosion releasing high levels of PCBs into the ambient air, but the efforts to monitor PCBs in the blood of local residents missed the peak PCB exposures in the blood since PCBs move rapidly through the body. The Swan Hills PCB incinerator was shut down.

Inversions and Need for Ambient Air Toxics Sampling to Evaluate Worst Case Dispersion

Inversions are periods of the year when the atmospheric conditions are likely to be stable and trap air pollution resulting in higher concentrations at ground level above the predicted ground level concentrations maximum or GLC max based on dispersion modeling. Inversions need to be fully evaluated as worst case ground level air pollution conditions for the PCB incinerator's stack emissions, but inversions were not evaluated as a local weather condition as a way to make the air pollution worse in the risk assessment for the Sydney Tar Ponds PCB incinerator. Full scale inversion analysis needs to be performed for the Sydney Tar Ponds incinerator because the risk assessment is flawed without such an analysis and using more accurate inversion assumptions. The Sydney Tar Ponds Agency needs to consider the following information.

One example of using inversions to evaluate worst case dispersion of incinerator air pollution is the Umatilla chemical weapons incinerator in Oregon which is fully permitted as a hazardous waste incinerator. According to the January 14, 2005 report, Comprehensive Monitoring Program Sampling and Analysis Plan for the Umatilla Chemical Agent Disposal Facility and Umatilla Chemical Depot, Hermiston, Oregon, it states:

"Field sampling in the winter quarter should be scheduled for a time period when temperature inversion conditions are likely to be experienced in the CMP sampling zones. A temperature inversion describes the stable atmospheric condition when a gradation of temperatures is formed where the ground is colder than the layers above. Meteorologists at the National Weather Service in Pendleton, Oregon, and Spokane, Washington, suggest that inversions are most likely to occur in the months of December and January. Favorable weather conditions for an inversion include snow cover and a very light breeze. Temperature inversions can last up to a week and may be accompanied by heavy fog. Cloudy weather may retain heat and is not a favorable inversion condition. Brief overnight inversions may frequently occur during favorable inversion conditions (95% probability). The nightly inversions normally break up mid-morning as the sun warms the earth." p. 28, 20 Another report on inversions is reference 21 by Prof Halstead Harrison which
indicates 58% of the hours at Umatilla with stable air capable of forming inversions.

The Umatilla air toxics monitoring involves a full range of 8 metals and 32 organic chemicals of concern to be sampled during inversions to see if they are emitted from the incinerator: Metals (8): antimony, arsenic, beryllium, cadmium, chromium, manganese, mercury and thallium.

Semivolatile Organics (2): bis(2-ethylhexyl)phthalate and 4-methylphenol.

Polychlorinated Biphenyls (13 PCB congeners):
3,3',4,4'-tetrachlorobiphenyl (PCB 77)
2,3,3',4,4'-pentachlorobiphenyl (PCB 105)
2,3,4,4',5-pentachlorobiphenyl (PCB 114)
2,3',4,4',5-pentachlorobiphenyl (PCB 118)

2’,3,4,4’,5-pentachlorobiphenyl (PCB 123)
3,3’,4,4’,5-pentachlorobiphenyl (PCB 126)
2,3,3’,4,4’,5’-hexachlorobiphenyl (PCB 156)
2,3,3’,4,4’,5’-hexachlorobiphenyl (PCB 157)
2,3’,4,4’,5,5’-hexachlorobiphenyl (PCB 167)
3,3’,4,4’,5,5’-hexachlorobiphenyl (PCB 169)
2,2’,3,3’,4,4’,5-heptachlorobiphenyl (PCB 170)
2,2’,3,4,4’,5,5’-heptachlorobiphenyl (PCB 180)
2,3,3’,4,4’,5,5’-heptachlorobiphenyl (PCB 189)

Dioxins: seven Polychlorinated Dibenzodioxin congeners:
2,3,7,8-tetrachlorodibenzo-p-dioxin
1,2,3,7,8-pentachlorodibenzo-p-dioxin
1,2,3,4,7,8-hexachlorodibenzo-p-dioxin
1,2,3,6,7,8-hexachlorodibenzo-p-dioxin
1,2,3,7,8,9-hexachlorodibenzo-p-dioxin
1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin
1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin

Furans: ten Polychlorinated Dibenzofuran congeners:
2,3,7,8-tetrachlorodibenzofuran
1,2,3,7,8-pentachlorodibenzofuran
2,3,4,7,8-pentachlorodibenzofuran
1,2,3,4,7,8-hexachlorodibenzofuran
1,2,3,6,7,8-hexachlorodibenzofuran
1,2,3,7,8,9-hexachlorodibenzofuran
2,3,4,6,7,8-hexachlorodibenzofuran
1,2,3,4,6,7,8-heptachlorodibenzofuran
1,2,3,4,7,8,9-heptachlorodibenzofuran
1,2,3,4,6,7,8,9-octachlorodibenzofuran

6. Sydney Tar Ponds PCB Incinerator: Temporary or Permanent Incinerator

The proposed PCB incinerator is described in Volume 1, Section 2.1.2 of the EIS as being only a “temporary” incinerator rather than a semi-permanent or permanent incinerator setting in one location for the length of the Sydney waste disposal operations. The incinerator is proposed to remain in one location and not moved around to multiple cleanup sites.

A “temporary” incinerator is a regulatory term that is more appropriate for a mobile incinerator set up temporarily for a few weeks to a few months, but not for a period of three to five years or significantly longer if serious problems occur in the incinerator such as major accidents, equipment damage, equipment failures, unsafe number of dump stack openings, air pollution control equipment problems, computer glitches, toxic fugitive leaks and numerous other challenges to keep the unit operating. The Sydney Tar Ponds Agency needs to address concerns that the incinerator could remain for a longer period of more like 5-10 years, especially if serious problems occur like they transpire at most large incinerators. The Vertac site in Arkansas was once one of the most heavily contaminated waste sites in the U.S. operating for about 15 months, but after it was permanently shut down, about ten more years were needed to complete most of the Vertac site cleanup.2

The EIS states in Volume 1, Section 2.1.2 that approximately two years will be necessary in the assembly and commissioning phases of the incinerator, which does not sound like a “temporary” incinerator. Mobile incinerators can usually be brought to a site, fully assembled, commissioned, conduct waste disposal operations and move to another waste site more quickly than in a two year period.

The Sydney Tar Ponds PCB incinerator is not presented as a “mobile” incinerator which could be easily moved from one location to another for treatment activities on a temporary basis, and therefore it does not appear to be a temporary mobile incinerator.

The Sydney Tar Ponds PCB incinerator appears to possess the same characteristics of a fully permanent large PCB or hazardous waste incinerator, except it’s identified as “temporary” rather than “permanent.”

The Sydney Tar Ponds incinerator is evidently permanent for the 3-5 year life span needed to burn the Tar Ponds PCB contaminated sediments and the PAH contaminated sediments.

List of References

1 Gerard F. Scannell [OSHA] and Don R. Clay [EPA], Task Force Report on Compliance with On-site Health and Safety Requirements at Hazardous Waste Incinerators (Washington, DC: OSHA and EPA, 1991). 31 pages. For a copy, contact EPA, Office of Solid Waste and Emergency Response, Washington, DC 20460.

2 Vertac Chemical Company site incinerator logs, documents and related information was reviewed by Neil Carman in 2002. Note related information in six issues of Rachel’s Environment & Health News:
Rachel's Environment & Health News #328 at http://www.rachel/org
Rachel's #328 - "An Update on Two Key Incinerator Battles." March 11, 1993
THE INCINERATION OF DIOXIN IN JACKSONVILLE, ARKANSAS: A REVIEW OF TRIAL BURNS AND RELATED AIR MONITORING AT VERTAC SITE CONTRACTORS INCINERATOR, JACKSONVILLE, AR

Rachel's Environment & Health News #281 at http://www.rachel/org
Rachel's #281 - "Hazardous Waste Incinerators: A Technology Out Of Control." April 15. 1992
Rachel's Environment & Health News #325 at http://www.rachel/org
Rachel's #325 - "A Sea of Trouble Engulfs Incineration." February 17, 1993
Rachel's Environment & Health News #328 at http://www.rachel/org
Rachel's #328 - "An Update on Two Key Incinerator Battles." March 11, 1993
Rachel's Environment & Health News #345 at http://www.rachel/org
Rachel's #345 - "Corruption out of control in Arkansas." July 8, 1993
Rachel's Environment & Health News #456 at http://www.rachel/org
Rachel's #456 - "Mysterious Motives at EPA (Jacksonville, Arkansas Vertac Incinerator scandal." August 24, 1995

3 Early to late 1990s Leaks and Explosions at the State-of-the-Art Commercial Hazardous Waste Incinerator operated by Chem Security at Swan Hills, Alberta, Canada.
http://www.miningwatch.ca/, the following is excerpted from A Proposal to Establish A Clean Canada Fund, A report by MiningWatch Canada and the Sierra Club of Canada, July 1, 2001.

4 ChemWaste Management in Rachel's Environment & Health News #281 at http://www.rachel/org
Rachel's #281 - "Hazardous Waste Incinerators: A Technology Out Of Control." April 15, 1992

5 ThermalKEM - The Herald*, Rock Hill, SC, November 16, 1990. ThermalKEM's use of its "DUMP STACK": Robert Guild, of Columbia, SC, an attorney for the Rock Hill-based Citizens for Clean Air and Water stated: "ThermalKEM has improperly used its emergency dump stack to routinely bypass required pollution-control equipment, which is critical to the removal of
toxic metals, acids and other particulates, without so much as a slap on the wrist by DHEC

[SC's Dept. of Health and Environmental Control] inspectors...He said company records indicate 94 instances in 1989 during which the thermal relief stack opened, bypassing the pollution-control scrubbers located on the plant's stack. In 10 of those cases, ThermalKEM's own records indicate the venting of the relief stack was not permitted under conditions of the company's permit, Guild said. He said use of the dump stack has been increasing, with more than 151 openings recorded between January and September of this year..." Cited in Waste Not #167. http://www.workonwaste.org/wastenots/wn167.htm

6 U.S. EPA Region 6 Dallas files on Rollins Deer Park, Texas facility.

7 Cited in Waste Not newsletter article - "Fire at Ensco's Little Rock, Arkansas, Facility prompts evacuation." Waste Not #117, September 20, 1990: http://www.workonwaste.org/wastenots/wn117.htm

8 MDEQ FACT SHEET, Proposed Renewal Operating License for The Dow Chemical Company, Michigan Operations, Hazardous Waste Treatment, Storage, and Disposal Facility and Major Operating License Modification for The Dow Chemical Company, Salzburg Road Landfill, Midland, Michigan, MID 000 724 724, MID 980 617 435 http://www.deq.state.mi.us/documents/deq-wmd-hwp-Dow_Fact_w_Att.pdf

Incinerator explosion reported at a hazardous waste incinerator on January 25, 1992 by Dow Chemical at its Midland, Michigan chemical plant. Incinerator explosion reported at a hazardous waste incinerator on February 4, 1993 by Dow Chemical at its Midland, Michigan chemical plant.

9 Another toxic waste incinerator is Onyx Environmental Services. This company caused multiple incinerator explosions and releases of clouds of poisonous gases into the air (Clark, July 30, 2003). p. 31,
http://www-sre.wu-wien.ac.at/neurus/Hermans.pdf

10 July 21, 2003, Citing History of Explosions, Releases of Poisonous Gases and Injured Workers, Watchdogs Urge Regulators to Close Toxic Waste Incinerator. Chicago, IL East St. Louis - Sierra Club, American Bottom Conservancy and Metro HOPE called on State and Federal officials today to deny new air pollution permits to a Sauget toxic waste incinerator and to shut the facility down. The environmental and watchdog groups pointed to a dismal twenty-year safety record that has included multiple incinerator explosions and dozens of other violations that have repeatedly released clouds of poisonous gases into the St. Louis metro area and even hospitalized workers.
http://illinois.sierraclub.org/news/072103pr.htm

11 Two incinerator explosions in one unit were reported March 31, 2006 in Nairobi, Kenya.
http://www.iol.co.za/index.php?set_id=1&click_id=68&art_id=qw114380604150B254

12 Maureen Y. Lichtveld, M.D., M.P.H., and Allan S. Susten, Ph.D., D.A.B.T., U.S. Agency for Toxic Substances and Disease Registry's report on Proceedings of the Expert Panel Workshop To Evaluate the Public Health Implications of the Treatment and Disposal of Polychlorinated Biphenyls-Contaminated Waste. September 13-14, 1993, Bloomington, Indiana. U.S. Department of Health and Human Services, Public Health Service, and Agency for Toxic Substances and Disease Registry, Atlanta, Georgia.

13 U.S. National Research Council's report on Waste Incineration & Public Health identifies multiple issues. ISBN 0-309-06371-X, Washington, D.C.: National Academy Press 2000.

14 Vertac incinerator public information website provides a historical record of key dates of events at the facility from Hercules subsidiary Vertac Chemical Company to the bankruptcy and cleanup of Vertac: http://diyenviro.tripod.com/mrk.htm
Approximately 28,000 drums of 2,4-D waste incinerated in neighborhood.
Approximately 2,700 drums of 2,4,5-T waste sent to Kansas to burn.

15 Pat Costner and Joe Thornton, report Playing with Fire; Hazardous Waste Incineration, (Washington, DC: Greenpeace, 1991).

16 Affidavit of Adlene Harrison, dated February 4, 1993, U.S. government official who served as the Regional Administrator for the United States Environmental Protection Agency, Dallas, Texas EPA Region 6 from 1977-1981.

17 Dioxin Monitoring System by Westech Instruments at:
http://www.environmental-expert.com/technology/dioxinms/

18   Westech Instrument Services, in conjunction with Apex Instruments Inc. USA.
http://www.westechinstruments.com/appspage.asp?samplingApplication=Dioxin%20Monitoring

19 Westech Instrument Holdings
http://www.westechinstruments.com/newsitem.asp?newsItemID=25

20   January 14, 2005 report, Comprehensive Monitoring Program Sampling and Analysis Plan for the Umatilla Chemical Agent Disposal Facility and Umatilla Chemical Depot, Hermiston, Oregon. Revision 16, Revised By: Washington Demilitarization Company, Hermiston, Oregon. Originally Prepared By: Battelle's Pacific Northwest Division, Richland, Washington, Contract No. 98200006. Umatilla Chemical Agent Disposal Facility I.D. No.: ORQ 000 009 431.

21 State of the art Air Emissions Modeling: A comparative study.

Air-Quality Dispersion Modeling in Complex Terrain near the Umatilla Chemical Agent Disposal Facility, Hermiston, Oregon.

Abstract
"Meteorological data at the Umatilla Chemical Agent Disposal Facility near Hermiston, Oregon, show a remarkable 58% of hours with stable air. A consequence of this will be many episodes with reduced efficiency for the dispersion of emissions. Dispersion models suggest infrequent but occasionally severe "garden-hose" impacts on the neighboring communities of Hermiston, Umatilla, Plymouth, Irrigon, and Boardman, with short-term concentrations up to 500 times the annual averages at these sites.

Attention should therefore be paid to non-linear effects on the exposed populations and to off-design emissions during stable conditions.

Umatilla Army Depot Chemical Weapons Incinerator is subject of comparative State-of-the-art Air Emissions Modeling; Lisa Brenner, The Oregon Clearinghouse for Pollution Reduction
Those working with Title V; industrial permitting and enforcement are familiar with EPA's ISCST-3 Gaussian Plume air dispersion model and know of EPA's more sophisticated, time-dependent model, CALPUFF.

In Oregon, modeling exercises produced during submission of permit applications are inevitably run with ISCST III. Frequently an abbreviated version of ISCST-3, using less than adequate meteorological data is submitted. Despite public testimony documenting concerns, our agencies accept the modeling results and the risk assessments based on them as evidence that emissions will not create health problems for surrounding communities. We have not previously been able to compare results from both types of models for the same facility and show the importance of state-of-the-art modeling..
When the Oregon Environmental Quality Commission permitted plans for an incinerator to dispose of the chemical weapon stockpile at the Umatilla Army Base in Eastern Oregon, an abbreviated version of ISCST-3 was allowed in the risk assessment using less than EPA required meteorological data. The incinerator is scheduled to begin burning in 2001.
Dr. Halstead Harrison, Professor of Atmospheric Sciences at the University of Washington became concerned with the public safety issues posed by the incineration of chemical weapons. As a public service, Dr. Harrison reviewed the air dispersion modeling accepted by our Department of Environmental Quality, and this March produced the following 26 page, illustrated, comparative study: Air-Quality Dispersion Modeling in Complex Terrain near the Umatilla Chemical Agent Disposal Facility, Hermiston, Oregon. This study is available at:
<"http://www.atmos.washington.edu/~harrison/umatilla/umatilla.pdf">
Easy to understand and useful to activists, the public, and environmental professionals, this report compares results from a simple, Gaussian Plume and a state-of -the-art time-dependent model, WPUF. This report will be of interest (in fact, a real eye opener) to anyone interested in understanding the differences between the two types of models, their assumptions, uncertainties, and uses in risk assessment. Dr. Harrison comments that "With risks at the Umatilla detoxification facility, my greatest concern is not with on-design operations, which good engineering can account for, but with off-design operations, exceptions, mixups, accidents, idiocies, and overt sabotage."
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