



Report on Emergency Incidents at Hazardous Waste Combustion Facilities and Other Treatment, Storage, and Disposal Facilities (TSDFs)

**Original Signed: April 19, 1999

MEMORANDUM

SUBJECT: Final Report on Emergency Incidents at Hazardous Waste Combustion Facilities and Other Treatment, Storage and Disposal Facilities (TSDFs)

FROM: Stephen F. Heare, Acting Director
Permits and State Programs Division

TO: Addressees

Attached for your information is OSW's Final Report on Emergency Incidents at Hazardous Waste Combustion Facilities and Other Treatment, Storage and Disposal Facilities (TSDFs).

This report provides a compilation of information on reported emergency incidents at hazardous waste combustion facilities and other TSDFs regulated under the Resource Conservation and Recovery Act (RCRA). It is limited to emergency incidents such as fires, explosions, hazardous waste spills or unauthorized releases of hazardous waste. This report covers the period from December 1977 through August 1995 with several incidents occurring prior to the enactment of RCRA. The information contained in this report was obtained from Regional and State waste combustion experts and permit writers. Please note that the contact name(s) listed may not reflect the current contact. Although every attempt was made to include all incidents at combustion facilities and other TSDFs regulated under RCRA, there may be incidents that EPA was unable to identify; therefore, this report may not be all inclusive.

We encourage you to continue to provide us information on similar incidents that occur at your facilities so we can maintain a national clearinghouse. Please forward such information to

Sasha Lucas-Gerhard of my staff. Also, if you have any questions regarding this report or would like additional copies, feel free to contact Sasha at (703) 605-0632 or at gerhard.sasha@epamail.epa.gov.

Attachments

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cc w/o Attachments

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**Report on Emergency Incidents at Hazardous Waste Combustion Facilities
and Other Treatment, Storage and Disposal Facilities (TSDFs)**

**U.S. Environmental Protection Agency
Office of Solid Waste
Permits and Programs Division
Washington, D.C. 20460**

April 1999

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EXECUTIVE SUMMARY

This report provides a compilation of information on reported emergency incidents at hazardous waste combustion facilities and other treatment, storage, and disposal facilities (TSDFs) regulated under the Resource Conservation and Recovery Act (RCRA). This report is limited to emergency incidents only (such as fires, explosions, hazardous waste spills or unauthorized releases of hazardous waste). Occurrences when emergency bypasses or thermal relief vents were used may be mentioned, but such events are not fully addressed in this report. This report represents a comprehensive compilation of incidents from December 1977 through August 1995, with several incidents occurring prior to the implementation of RCRA. This report also includes two additional incidents; one from 1997 and one from 1998. The addition of incidents from 1997 and 1998 does not account for all incidents during the time period from September 1995 to present. As more information becomes available, this report will be updated.

Information in this report was obtained from Regional and State waste combustion experts and permit writers. In many cases, the state agencies had collected and maintained information regarding emergency incidents at RCRA facilities. In cases where information was incomplete, memories of EPA and state permit writers were relied upon. Although every attempt was made to include all incidents at combustion facilities and other TSDFs regulated under RCRA, there may be incidents that EPA was unable to identify. Therefore, this report may not be all inclusive.

Emergency incidents at 24 hazardous waste combustion units and 26 other TSDFs are documented in this report. Of the incidents that have occurred, 9 facilities experienced incidents that were directly related to the actual combustion of hazardous waste. The remaining incidents involved were not combustion related and consist of activities such as waste handling and storage. As indicated in the individual facility write-ups, some of the incidents occurred before RCRA was instituted and full RCRA safeguards were not in effect.

The report begins with a summary table listing the number of reported incidents (per facility type) that have occurred in each of the EPA Regions, and the number of combustion facilities with incidents that resulted from the actual combustion of hazardous waste. On the next page is a chart showing the number of incidents that occurred at combustion facilities and TSDFs from 1977-1998. The chart is followed by a Regional summary of each individual incident and the EPA or State contacts who provided the information regarding the incident. The report ends with a complete listing (by Region) of each facility. Where available, detailed incident reports are included as attachments.

TABLE I. Number of Combustion Facilities and TSDFs with Reported Incidents by Region ^{1,2}

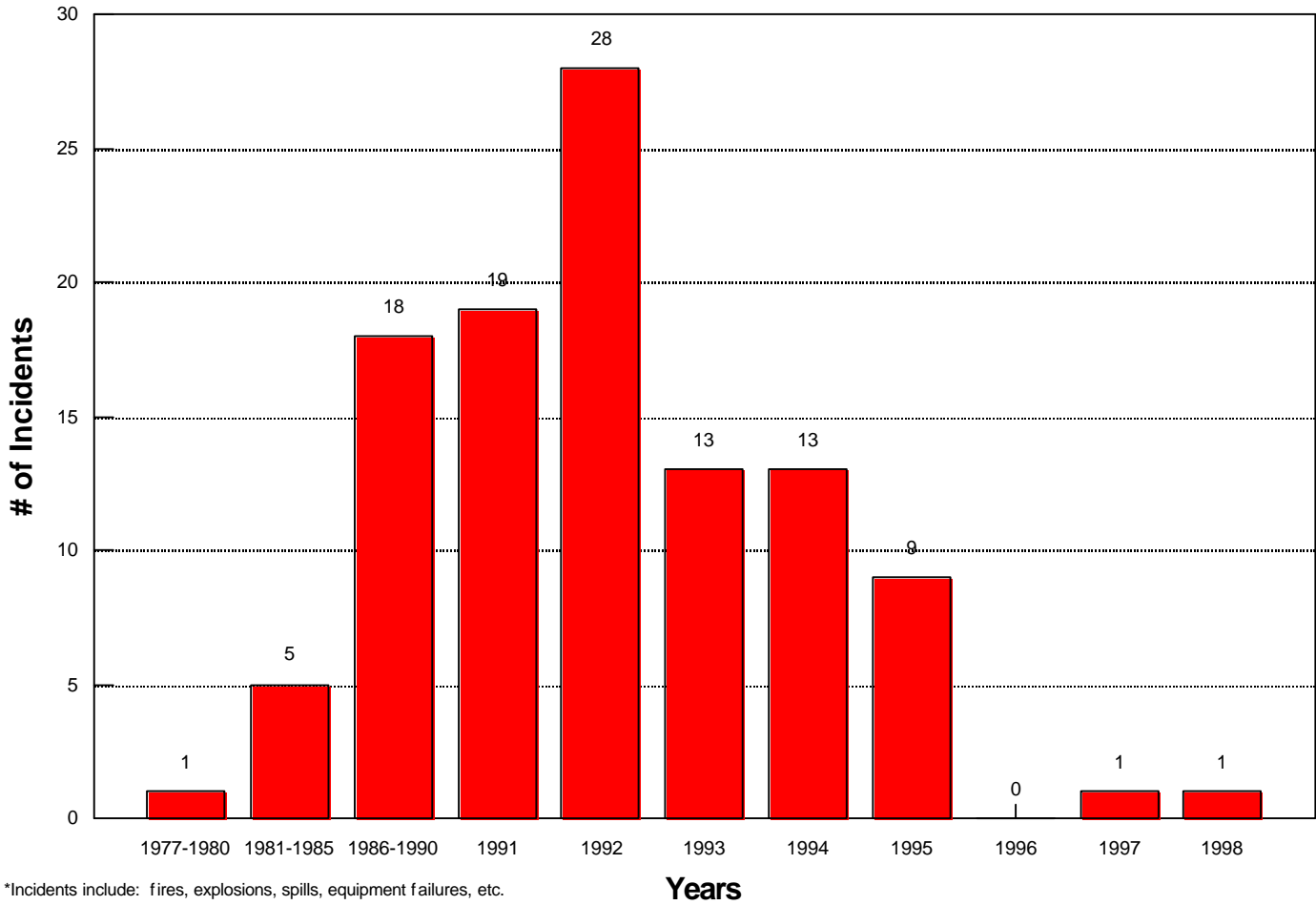
	Hazardous Waste Combustion Facilities			Other TSDFs	
Region	# Facilities Under Interim Status with Incidents	# Facilities Under Permit Status with Incidents	# Facilities with Incidents due to Actual Combustion of Hazardous Waste	# Facilities Under Interim Status or Not Permitted with Incidents	# Facilities Under Permit Status with Incidents
I	0	0	0	0	0
II	0	2	0	1	0
III	0	0	0	2	0
IV	4	2	1 ⁴	7	4 ³
V	2	5	3 ⁵	0	0
VI	0	3	2 ⁶	0	0
VII	1	4	3 ⁷	0	1
VIII	0	0	0	0	1
IX	0	1	0	0	4
X	0	0	0	4	2
Total	7	17	9	14	12

* See next page for footnote details.

Footnotes

- 1. Some facilities listed in this table have had multiple incidents. Please see attached summaries for more information.**
- 2. Some facilities have been accounted for twice: incidents occurring during a non-permitted or interim status, incidents occurring during a permitted status, and/or incidents due to the actual combustion of hazardous waste. Please see attached summaries for more information.**
- 3. Includes a permitted nonhazardous facility; Albright and Wilson.**
- 4. Fires occurred on two separate occasions in the combustion unit of the ThermalKEM facility.**
- 5. Incidents included a fire in the combustion units of DOW, CWM, and Ross.**
- 6. Fires occurred in the furnace duct of the incinerator at Rollins Deer Park and in the kiln at CWM.**
- 7. Incidents occurred in the incinerator at the Lake City Army Ammunition Plant after live rounds of ammunition were set off on the conveyer belt after being treated, an explosion in the scrubber of the combustion unit at Aptus, and an explosion in the kiln at ICI.**

**CHART 1. Number of Incidents at Combustion Facilities and TSDFs
1977-1998**



REGION I

Regional Summary

There has not been any reported incidents at combustion facilities or other TSDFs in Region I.

REGION II

Regional Summary

Incidents were reported at two incinerators in Region II. One incident occurred at the Eastman Kodak facility in Kodak Park, New York. The other incident occurred at the Bridgeport Rental and Oil Services Superfund incinerator in Bridgeport, New Jersey.

In 1977 a series of explosions and fires occurred at the Rollins Environmental Services tank farm in Logan Township, New Jersey. The facility did not have a RCRA permit at the time.

Eastman Kodak Company, Kodak Park, New York

Contact: John Brogard, EPA Region II (212) 637-4162

On July 12, 1990, an incident occurred at the RCRA-permitted Kodak Park chemical incinerator. Approximately 75 gallons of recycled cooling water spilled when the cooling water system ruptured. Two gallons of spilled water contacted the ground, while the remaining 73 gallons flowed into an industrial sewer. The ruptured line was repaired within two hours and the facility was put back into operation. For additional information, see Attachment 1.

Bridgeport Rental and Oil Services (BROS), Bridgeport, New Jersey

Contact: John Brogard, EPA Region II (212) 637-4162

An explosion occurred at the BROS facility on September 20, 1992. According to the Region II contact, the explosion was caused by a rapid steam generation that resulted when a slag ring that formed in the kiln fell into the water in the ash quench. He also noted that although the oxygen and CO concentrations were normal prior to the event, the total hydrocarbon monitor readings were unusual for a large part of the day. In addition, the waste feed had already stopped 50 minutes prior to the explosion. The explosion blew off the hinged sides of the weigh belt used to meter the contaminated soil to the rotary kiln. There were fugitive emissions associated with the explosion, but no injuries or natural resource damages were reported.

Another incident was reported at this facility on September 21, 1992. On that date, a large amount of ash was released while workers were trying to attach the screw feeder after emptying the multi clone. Particulate matter was released into the air for eight minutes and traveled across U.S. Route 130. EPA was not aware of any health or environmental impacts from this release. Although this is a Superfund site, the State of New Jersey had previously issued the facility a permit equivalent to a RCRA-permit. For additional information, see Attachment 2.

Rollins Environmental Services Inc., Logan Township, New Jersey
Contact: John Brogard, EPA Region II (212) 637-4162

On December 8, 1977, Rollins Environmental Services (RES) in Logan Township, N.J., experienced a series of explosions and fires at their tank farm. The initial explosion occurred at approximately 2:15 p.m., and was followed by between two and five additional explosions. The ensuing fire lasted about 1½ hours, during which time approximately 12 storage tanks and two tank trucks exploded and/or burned. The incident claimed six lives and injured 12 on-site workers who were various contractors performing specialized maintenance work. In addition, about 40 firemen were admitted to the local hospital for smoke inhalation and released after treatment. At the time of the incident, the facility did not have a RCRA permit.

Representatives from the NJ Department of Environmental Protection (NJDEP), the NJ. Department of Health (NJDOH), the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), the U.S. Treasury Bomb Squad, and state and local police worked with local public safety officers and Rollins personnel to minimize the immediate and longer-term damage from the fire and explosions. Although state and federal authorities determined that evacuation of Bridgeport, the nearby town, was not necessary, they warned all persons who were in direct contact with the explosion scene to take precautionary measures with clothing and equipment because of possible toxic contamination.

Results of monitoring and surveillance studies indicated that the explosion and fire had not caused any off-site contamination. After substantial review by the appropriate state and federal authorities, the RES facility was permitted to reopen subject to certain conditions, including a consent order that stipulated the incinerator operational temperature for toxic substances. For additional information on this facility, see Attachment 3.

REGION III

Regional Summary

There have not been any reported incidents at combustion facilities in Region III.

Two incidents have been reported at other commercial treatment and storage facilities in Region III. One incident took place at Mill Service, located in Yukon, Pennsylvania. The second incident occurred at the Delaware Container Company in Coatesville, Pennsylvania.

Mill Service, Yukon, Pennsylvania

Contact: Marcos Aquino, EPA Region III (215) 597-8187

Mill Service treats hazardous waste sludges that exhibit toxic characteristics (TC) to render them nonhazardous so that they may be disposed of as nonhazardous wastes in a Subtitle D landfill. Two different types of incidents were reported at this facility.

The first incident occurred on November 12, 1991. Between 5,000 and 20,000 gallons of partially treated waste sludges were accidentally placed in a surface impoundment at the facility, which was operating under interim status at the time. These wastes still exhibited the TC. The facility was closed by the State until March 1992 when in-situ treatment was performed on the material. The facility was allowed to reopen in April 1992.

Since the facility has reopened, it has had recurring problems with NO_x fuming from waste pickle liquor. In particular, tank trucks used for transporting these wastes to the facility were not always cleaned out properly. Whenever the dome of the truck was removed, a NO_x puff resulted. This type of incident has occurred approximately six times during the last ten years. No incidents have occurred since 1992, since the facility installed NO_x and H₂S monitors. Trucks are now unloaded in a different manner to prevent releases. In addition, air pollution control equipment has been installed in the truck unloading areas.

Delaware Container Company, Coatesville, Pennsylvania

Contact: Victoria Ioff, EPA Region III (215) 597-7237

On October 14, 1985, an incident was reported at the Delaware Container Company facility in Coatesville, Pennsylvania. Delaware Container treated hazardous and residual wastes in its waste solidification area. During interim status the facility received a shipment of waste that contained an aluminum-based paint. This particular waste was not identified on the shipping manifest and was not detected by Delaware Container's testing procedures. An exothermic reaction resulted from the mixture of aluminum waste and cement kiln dust and a form of an unidentified gas was released. Residents of the surrounding community reported a strange odor from the facility and contacted the state's emergency

response personnel. The exothermic reaction ended when response personnel removed the tarp that covered the waste and redistributed the mixture. Although the facility reported that approximately 32 community residents were treated in a neighboring hospital for nose and throat irritations, the community claimed that the number of those treated was closer to 100. No hospitalizations or deaths resulted from the incident. Delaware Container was fined by the State of Pennsylvania for an air pollution violation.

REGION IV

Regional Summary

There have been 15 documented incidents at combustion facilities in Region IV. Two of these events (ThermalKEM, July 10, 1987 and December 8, 1988) were related to the actual combustion of hazardous waste; these incidents occurred before the units were under RCRA permits. The remaining events either occurred while the units were on auxiliary fuel, or were related to ancillary equipment.

There have been 22 documented incidents at TSDFs in Region IV. These incidents include fires, spills, an explosion, and a collapse of a landfill berm.

ThermalKEM, Rock Hill, South Carolina

Contacts: Brian Kaplan, EPA Region IV (404) 347-3433 and

Joan Hartley, S.C. Department of Health and Environmental Control (803) 734-5167

There have been five incidents at the ThermalKEM facility in Rock Hill. The first incident occurred on July 10, 1987. The incinerator was operating under interim status at the time. An explosion resulted from a 10% nitroglycerine 90% lactose material that had been incorrectly identified by the generator as not heat reactive and not explosive. Three explosions resulted from the introduction of this waste into the incinerator. The first two explosions occurred within the incinerator kiln; the third occurred partially outside the incinerator. There were no spills, fires, or hazardous waste releases, although two employees did complain of ringing of the ears. Following the incident, more rigorous waste approval procedures were instituted, including use of a Differential Scanning Calorimeter.

The second incident at ThermalKEM occurred on December 8, 1988. A drum caused a strong reaction within the incinerator, and a large pressure surge caused the safety pressure relief door to open. A fuel line was also ruptured. The explosion resulted from nitrocellulose that had been incorrectly identified by an EPA contractor as a non-reactive F005 solvent. Following the incident, ThermalKEM instituted procedures for on-site sampling and analysis of remedial wastes, as well as 100% inspection and testing of drums upon receipt.

The third incident at ThermalKEM occurred on March 24, 1991. Low water pressure caused the boiler tube to fail, which in turn caused the package boiler to explode. The explosion moved the boiler approximately 50 feet, resulting in extensive damage to the boiler, the boiler house, and also severing of the steam and fuel oil lines. The boiler was burning natural gas at the time of the explosion. Thirty (30)

gallons of diesel fuel combined with water were spilled but contained, and the thermal relief vent on the incinerator was activated.

The fourth incident occurred on April 25, 1993, and involved a fire around their Solid Drum Repackaging System (SDRS). It was reported that hydraulic hoses and oil which are part of the SDRS system caught fire. Company representatives reported that no wastes were being processed at the time of the fire. There were also no reported injuries.

The fifth incident took place on January 14, 1995, when a fire occurred at 4:55 a.m. in the Drum Repackaging Building in the Fiber Drum Storage Area. ThermalKEM implemented the contingency plan and promptly notified off-site emergency response agencies. The fire was fought by ThermalKEM employees and brought under control by 6:30 a.m. All fire water was captured in the secondary containment system, and no off-site releases occurred in amounts above the reportable quantities. One employee experienced a minor wrist burn, which was treated at the site. The facility concluded that no explosions had occurred during the fire. ThermalKEM believes that the fire was caused by a nonhazardous waste stream of molybdenum paste. After processing, the paste was grounded into a highly flammable and reactive powder. This powder was then mixed with wood flour, which absorbed the organic constituents and started the fire. To prevent recurrence, the facility took the following corrective measures: (1) the waste analysis plan was revised to incorporate a test of each batch of fibers produced for reactivity; (2) the storage area for fiber drums was limited to areas equipped with automatic foam suppression systems and (3) the contingency plan was revised to create a new off-site Response Coordinator position and to add additional persons to the contact list. See Attachment 4 for additional information.

***Laidlaw Environmental Services (Thermal Oxidation Corporation), Roebuck, South Carolina
Contacts: Denise Housley, EPA Region IV (404) 347-3433 and
Shelly Sherritt, S.C. Department of Health and Environmental Control (803) 734-5203***

Five releases have been reported at this interim status incinerator and related storage areas. The facility's permit was issued in September 1988. The State and Federal portions of the permit were appealed, and the State permit has not yet been settled. The Federal portion of the permit is effective and contains requirements related to HSWA.

The first release occurred on March 17, 1982, when 3,000 gallons of various types of solvents were spilled from the pipe that connects the blend tanks to the incinerator. The contaminated soil was removed immediately. The release was detected during a routine inspection, when it was discovered that a small section of the pipe had corroded, creating a hole which the solvents leaked out of.

The second incident at Laidlaw occurred on February 9, 1988, when 6,000 gallons of maleic anhydride spilled from a storage tank. Again, the contaminated soil was quickly removed.

The third incident occurred on March 22, 1991, when the thermal relief vent (TRV) from the Laidlaw incinerator vaporizer was blown off the unit and fell down to the direct burn containment pad. The exact cause of this incident is not known, but may have occurred due to a faulty natural gas regulator. At the time of the incident, the liquid injection unit was on natural gas. There were no injuries or known hazardous waste releases. As a result of this incident, EPA and the facility entered into a consent agreement that required Laidlaw to improve its reporting procedures and TRV controls.

On February 8, 1994, Laidlaw received a shipment of orthochlorophenol. During redrumming, the orthochlorophenol emitted a vapor cloud which drifted off site. One person reported sinus problems resulting from exposure to the vapor cloud while driving off site. The facility had no violations related to this emission, but did install a hood system in the outdoor container redrumming area to eliminate the possibility of future instances.

The fifth incident occurred on September 19, 1994, when a small fire occurred as an out-of-service welder dismantled a tank. The fire was contained and extinguished in approximately three minutes. The facility did not have to evacuate the area and no injuries resulted from the incident. See Attachment 4 for any additional information.

U.S. Department of Energy, Oak Ridge, Tennessee
Contact: Beth Antley, EPA Region IV (404) 347-3433

On June 15, 1989, while completing a trial burn, an induced draft fan of the incinerator at the permitted Oak Ridge facility failed. Although the exact cause of the failure is not known, an examination of the fan revealed that severe cracks had been forming in the impeller. The failure breached the fan housing and debris was found as far away as 370 feet. Flying debris damaged the stack. There were no injuries and no detectable off-site releases of toxic material as a result of the incident. See Attachment 4 for additional information.

Diversified Scientific Services, Inc. (DSSI), Kingston, Tennessee
Contact: Rick Gillam, EPA Region IV (404) 347-3433

On July 31, 1992, during preparation for a BIF compliance test burn, a brief electrical outage allowed some unburned propane to go through the DSSI boiler. When the unburned propane reached the charcoal filters in the secondary pollution control system, the filters caught fire and burned for approximately four minutes. The fire then spread to the HEPA filters, but was contained by DSSI's emergency response team. There were no injuries or hazardous waste releases. The facility was operating under interim status at the time. See Attachment 4 for additional information.

LWD, Clay, Kentucky
Contact: Beth Antley, EPA Region IV (404) 347-3433

On February 2, 1982, a direct-feed tank truck containing acetone exploded and caught fire at the interim status LWD incinerator facility. Vapors in the truck were accidentally ignited by the operator while he was checking the waste level in the tanker. An oil/acetone mixture was released as a result of the explosion, and a small stream of fire fighting water flowed into a drainage ditch and eventually a creek. Three other tank trucks also caught fire, but no releases were reported. Hazardous wastes were released inside an earthen dike where the tank trucks were located. The operator received extensive burns above the waist and a compound fracture of the leg. The facility is now closed. See Attachment 4 for additional information.

Carolina Solite, Norwood, North Carolina
Contact: Hugh Hazen, EPA Region IV (404) 347-3433

On November 4, 1993, one of the waste blend tanks at this permitted facility burst a pipe and spilled approximately 2,500 gallons of waste. Most of the waste remained in the secondary containment system, but an estimated 50 to 100 gallons of waste escaped onto adjacent soils. The facility acted promptly and the contamination was remediated effectively. The State of North Carolina issued a notice of violation on September 26, 1994 for using a front-end loader for remediation that was made of carbon steel, which presented a flash hazard, and also for failing to decontaminate the same front-end loader before it left the site. A similar spill occurred in January 1994.

Southeastern Chemicals, Sumter, South Carolina
Contact: Bill Corder, S.C. Department of Health & Environmental Control (803) 734-5166

There have been four fires at this permitted facility, none of which resulted in a major release. The fires occurred on April 12, 1992, April 14, 1992, April 20, 1992, and June 6, 1992.

Laidlaw Environmental Services (GSX Laidlaw Landfill), Pinewood, South Carolina
Contact: Sean Barron, S.C. Department of Health & Environmental Control (803) 734-5160

This facility has experienced four fires, two of which occurred while the facility was operating under interim status. In 1991, there was a fire at the drum shredder unit. No major release was reported. Also in 1991, the berm of the landfill collapsed during construction, but there were no hazardous materials involved. In February 1992, there was a spill at the waste solidification unit. Information on the amount or type of spill was not available, but the spill was remediated promptly by removing all affected soil.

On September 9, 1993, a fire occurred in the hazardous waste drum shredder unit. The fire involved two 55-gallon containerized drums of lithium manganese batteries, but it is unclear if the batteries actually caused the fire. The fire was quickly extinguished and no injuries were reported.

The facility received a RCRA permit on March 23, 1994. On April 12, 1994, a fire involving alkaline batteries began in the nonhazardous subcell IIA of the Laidlaw facility. The fire was extinguished and no injuries were reported.

The fourth incident occurred when a bulk load that contained oil and grease was being managed in the facility's treatment tanks. Facility workers observed smoke and small pockets of flames coming from the load. The facility workers later found that the load also contained caustic manure and aluminum turning, which was suspected as the cause of the fire.

Safety-Kleen Lexington Recycling Center, Lexington, South Carolina
Contact: Bill Corder, S.C. Department of Health & Environmental Control (803) 734-5166

Two spills have occurred at this permitted facility; however it is uncertain what substances they were. On April 8, 1992, approximately 300 gallons were spilled while filling a tank. Forty gallons were spilled on June 19, 1992, again while filling a tank.

Holnam/Safety-Kleen, Holly Hill, South Carolina

Contact: Sean Barron, S.C. Department of Health & Environmental Control (803) 734-5160

There have been two incidents at the Holnam/Safety-Kleen facility. The first occurred on October 23, 1987, when a 100,000-gallon fuel tank exploded. There is little information on this incident, as it was not a regulated unit.

On August 13, 1992, there was a 638-gallon spill during a railcar transfer. The facility remediated the site. The facility was permitted at the time of the incidents.

CP Chemicals, Sumter, South Carolina

Contact: Joan Hartley, S.C. Department of Health & Environmental Control (803) 734-5167

On November 29, 1985, there was a spill of approximately 2,200 gallons of ammonia and 2,000 gallons of hydrochloric acid from two storage tanks. These releases resulted when the tank valves were left open. Two employees were arrested two weeks later and charged with intentionally causing the releases.

The CP Chemicals facility was permitted in April 1990 and is subject to secondary containment and inspection requirements that should minimize the impact of future releases.

Albright and Wilson, Charleston, South Carolina

Contact: Sean Barron, S.C. Department of Health & Environmental Control (803) 734-5160

Two incidents have occurred at this permitted facility. On June 17, 1991, there was an explosion and fire in the Special Products Unit (SPU) which killed nine people. Water used to fight the fire was released into a containment pond.

The second incident occurred on January 14, 1993, in the High Temperature Unit (HTU). A rupture in the steam jacket and piping in the HTU resulted in a release of steam and byproducts.

Although the facility was permitted for treatment and storage when both of these incidents occurred, no hazardous waste was involved.

E.I. DuPont de Nemours, Axis, Alabama

Contact: Steven Cobb, Alabama Department of Environmental Management (334) 271-7726

On June 9, 1994, approximately 3,800 gallons of sulfuric acid were released from a leaking transfer pipe at this permitted DuPont commercial combustion facility. Approximately 2,500 gallons of the material were recovered. An estimated 300 cubic yards of contaminated soil were removed and disposed of. This facility was permitted at the time of the incident.

On June 10, 1994, one drum, containing approximately one gallon of hydrogen peroxide and twenty gallons of ground corncobs, burst due to a buildup of pressure inside the drum.

Chemical Waste Management, Inc. (CWM), Emelle, Alabama

Contact: Steven Cobb, Alabama Department of Environmental Management (334) 271-7726

On November 10, 1992, Unit 700 started smoldering and eventually burst into flames while Oil Dry was being added to a drum of waste epichlorohydrin. The automatic overhead sprinklers were immediately activated and the fire brigade responded. The fire was contained within the tipping pan, and no personnel injuries were reported. This facility was permitted at the time of the incident.

On December 5, 1992, approximately 170,000 gallons of water were pumped from the fire water tank to the crusher dispersion unit. Subsequent sampling of the accumulated water revealed that it was contaminated with D039 hazardous waste. Soil samples taken from the ditch through which the water flowed were analyzed and found to be contaminated. The ditch was later excavated and the soil was properly managed.

On December 8, 1992, a fire occurred while stabilizing a vat of D004/D018 hazardous waste in Unit 1200. The fire occurred after portland cement was added and was contained in the stabilization vat. No injuries were reported.

On January 9, 1993, an employee observed a reaction in the landfill which resembled a "roman candle" in nature. The employee also observed a ball of fire rising a few feet above the active trench followed by a puff of smoke and another ball of fire.

On February 26, 1993, during the processing of a load of waste in a vat in Unit 1200, a flash-ignition of the reagent sulfur was observed as it was being mixed with the waste. The flash lasted no more than 1-2 seconds and there was no visible release of hazardous substances to the environment.

Fisher Industrial Services, Inc., Glencoe, Alabama

Contact: Steven Cobb, Alabama Department of Environmental Management (334) 271-7726

Various materials were placed into a roll-off box on August 13, 1993. The materials included hazardous wastes D001, D004, D007, D008, F002, F003, and F005. A small fire was observed in the roll-off box on August 14, 1993. The fire was restricted to the container where the reaction occurred. This facility was permitted at the time of the incident.

REGION V

Regional Summary

Incidents at six RCRA incinerators have been reported. Incidents at three of these facilities, Dow Chemical Company in Midland, Michigan; Chemical Waste Management in Chicago, Illinois and Ross Incineration Services in Grafton, Ohio, consisted of explosions involving the combustion of hazardous waste. Facilities that experienced other incidents include: WTI in East Liverpool, Ohio; Trade Waste Incineration in Sauget, Illinois and the 3M facility in Cottage Grove, Minnesota.

There have been no reports on incidents that have occurred at other TSDf's in Region V.

Dow Chemical Company, Midland, Michigan

Contact: Cheryl Howe, Michigan Department of Environmental Quality (517) 373-9881

On January 25, 1992, a natural gas explosion occurred next to one of Dow's two permitted incinerators. While unplugging the incinerator feed line, the worker failed to block off the natural gas feed and turn off the burner pilots. As a result, natural gas that was fed to the incinerator when the kiln cooled down leaked into a room adjacent to the incinerator and ignited. This incident occurred during normal operations. One worker sustained burns to the face and hands, while another worker complained of ringing in the ears. There is no evidence that any hazardous waste was released, and there was no natural resource damage. Following the incident, the facilities made improvements in their gas sensing equipment and interlock system, and also took steps to ensure adherence to proper procedures for unplugging feed lines.

On February 4, 1993, another explosion occurred in the 703 Building Rotary Kiln Incinerator. The primary cause of the incident is attributed to an explosion of a five-gallon pail of Nitrobid(R) (a pharmaceutical), or process wastes from the production of Nitrobid(R), being fed into the incinerator. The explosion was relieved through both the explosion damper and the emergency vent stack. Some solid, non-regulated rubbish was released through the explosion damper, and some visible flames and hot gases were emitted from the emergency unit. The incident occurred during normal operations, and no injuries or exposures to hazardous waste occurred as a result of this incident. All cleanup and repairs to the incinerator were completed promptly and the unit was returned to service on February 7, 1993. Following the incident, the facility made improvements to its contingency plan and agency notification requirements. For more information, see Attachment 5.

Chemical Waste Management Inc. (CWM), Chicago, Illinois
Contact: Juana Rojo, EPA Region V (312) 886-0990

On February 13, 1991, an explosion occurred in the rotary kiln of the interim status CWM Chicago incinerator, 28 seconds after a 16-gallon drum containing two laboratory chemicals was fed into the kiln. The drum contained a lab pack prepared by the generator. One of the chemicals, tetrazole (20 Kg), was identified as the cause of the explosion. CWM identified the material but failed to recognize it as an explosive. The explosion damaged the seals of the kiln and caused sections of the kiln's outer shell and end plate to bulge. Although three employees experienced headaches and tinnitus (ringing in the ears), there were no injuries as a result of the incident. There was also no indication of toxic releases into neighboring areas. The Region required the plant to replace several parts of the unit before restarting operations. Additional fire prevention and safety equipment were also required.

See Attachment 6 for additional information.

Ross Incineration Services, Inc., Grafton, Ohio
Contact: Mike Galbraith, EPA Region V (312) 886-6182

An incident occurred on August 12, 1994, which involved the ignition of a waste drum that created a fire. One employee was injured by the ignited vapors and liquid, and there was minor damage to the side door of the incineration system. Operations at the Ross Incinerator were suspended overnight but resumed the next day. An investigative team determined that the accident was caused when a skid covered with acid residue was improperly loaded with waste drums. (The acid residue was left in the bottom of the skid after waste materials had been incinerated.) The skid was reloaded with waste drums by employees who failed to follow instructions to incinerate the residue before loading the drums. When the drums were incinerated, the acid residue on the skid heated one of the drums, causing it to become pressurized and release vapors and liquid. The vapors and liquid ignited, consequently setting fire to the other three drums. Cyclohexane, styrene, and mineral spirits were released into the air as a result of the fire.

A similar incident occurred on May 1, 1995, which involved an explosion in the secondary combustion chamber (SCC) of the incinerator unit while drummed waste was being fed to the unit. The explosion separated the exit door of the chamber and damaged the activation system of the bypass stack mechanism. Most of the damage occurred in the interior of the secondary chamber refractory. Although no injuries were reported, a portion of the chamber brick roof collapsed and was left opened to the environment. As a result, fugitive emissions were released. Due to the damage to the secondary chamber door cooling system, the induced draft fan did not function for 10 minutes after the incident, and the air pollution control device system did not operate for one hour after the incident. Although Ross implemented their shut down procedures using bypass fuel to slowly cool the unit, it took eight days to completely shut the unit down. Ross has agreed not to feed waste through the side door of the secondary chamber until all information related to this incident has been evaluated and written approval was obtained from EPA.

The facility reported that the vapor or liquid could have been ignited when it came into contact with the hot skid, the hot residue material, or the metal wall of the incinerator. The facility also reported that there was a remote chance that ignition was caused by heat coming from the entrance chamber of the side door.

The facility maintained that the incident would not have occurred if existing operating procedures had been followed. The facility has implemented the following measures to prevent future accidents:

- The side door operating procedures have been augmented to require additional cooling time for skids and to move the drum preparation area further away from the incinerator. New procedures also require the incinerator foreman and shift team leader to oversee skids through the incineration process.
- All incinerator operators and supervisors received additional training on the augmented side door procedures, with emphasis placed on communications between operators and employees on different shifts.
- Heat shields have been installed between waste handling areas and the exterior of the incinerator.
- Procedures for drum opening have been modified to achieve greater safety.

Waste Technologies Industries (WTI), East Liverpool, Ohio
Contact: Gary Victorine, EPA Region V (312) 886-1479

On February 14, 1995, there was a small electrical fire in the control cabinet of the spray dryer penthouse. It was immediately extinguished by plant personnel with a fire extinguisher. The spray dryer is controlled both electrically and hydraulically, and some of the hydraulic piping which runs through the control cabinet ruptured and spilled into the penthouse, on the floor grating, through the grating and through the grating insulation. The oil was steam cleaned off of the grates on the following evening.

On February 15, 1995, bulk waste that was caught in the clamshell of the loading system caught fire. Within 1 minute the sprinkler system activated and extinguished the fire. The fire was believed to be caused by a "flashback" of powdery material that fell out of the clamshell bucket. Damage was reportedly limited to the crane bucket wires, cables, and insulation in the immediate area.

On March 15, 1995, a repulsive odor was released from the facility which affected much of East Liverpool. The odor originated from a tanker unloading waste containing mercaptan thiophenol. No release point was ever identified with certainty, but reportedly only a few drops of this waste could have resulted in this kind of problem. WTI stopped receiving shipments of this waste until it completed enclosure of the tanker truck unloading pad and vented the enclosure to the vapor recovery system.

On July 3, 1995, the waste in one of the two bulk solid waste pits caught fire. The fire was quickly extinguished by the automatic water deluge system. There were no reported injuries, and the only reported damage was to the door of the pit. Since this enclosure is vented to the vapor recovery system, no significant releases were suspected, but some smoke was reported as leaking out from under and around the door. The ignition source was attributed to a burning piece of waste either traveling through the air from the incinerator feed chute doors to the pit, or being carried from the chute doors to the pit via the clamshell bucket.

Trade Waste Incineration (part of CWM), Sauget, Illinois
Contact: Juana Rojo, EPA Region V (312) 886-0990

There have been three incidents at this permitted facility. The first incident occurred on January 16, 1990, when the facility was evacuated due to vapor cloud emissions of hydrochloric acid (HCl) from a storage tank. The incident occurred when facility personnel failed to properly identify the corrosivity characteristics of the contents of a tank truck received at the facility. When the tank truck contents were transferred to the TWI storage tank, a large plume of chlorinated gas containing 196 pounds of HCl was emitted from the tank. The facility has since instituted additional confirmation of the blending samples, and has also established better training procedures for its personnel regarding tank-to-tank transfers.

The second incident happened on January 26, 1991, when sodium azide, the explosive found in automobile air bags, was incinerated. The ash from this waste was placed in the dumpster; a few hours later, the ash exploded. The ash appeared to have been incompletely burned.

The third explosion occurred on February 5, 1991, which resulted when a worker used a pole to dislodge molten slag that partly blocked the exit from an incinerator during operation. As the slag fell into the ash pit below, contact with the water caused a steam explosion that severely burned the worker. Vaporized hazardous waste was released. There were no reports of other injuries or environmental impacts from these two incidents.

See Attachment 7 for additional information.

3M, Cottage Grove, Minnesota
Contact: Fred Jenness, Minnesota Pollution Control Agency (612) 297-8470

There have been two incinerator-related incidents at this 3M facility. The first incident occurred in the early 1980's when hot slag came into contact with low-temperature ash quench water. The impact of the hot slag on the quench water resulted in a thermal explosion. No injuries or releases to the environment resulted from the incident. The facility was under interim status at the time; the facility received a RCRA permit on March 29, 1989.

A similar incident occurred on September 18, 1992, after the facility received a RCRA permit. Molten metal in the slag dropped into the ash quench, trapping some water and creating a steam explosion. The resulting pressure blew off the pressure relief panels and ruptured the brick walls of the air seal and some of the lightweight wall panels of the ash house. There were no injuries or releases of hazardous wastes to the environment, with the exception of a brief release of smoke from burning fuel oil.

See Attachment 8 for additional information.

REGION VI

Regional Summary

There have been reports of incidents that have occurred at three RCRA-permitted incinerators in Region VI. The Ensco facility in El Dorado, Arkansas has had two incidents involving its incinerator. Another incident occurred at the Rollins facility in Deer Park, Texas, where a fire broke-out in the furnace duct. The Chemical Waste Management facility, located in Port Arthur, Texas, has had one incident that consisted of a kiln fire during normal operation and another that consisted of a leaking storage container.

There have been no reported incidents at other TSDf's in Region VI.

Ensco, El Dorado, Arkansas

*Contact: Derik Warrick (501) 570-2893 and Rhonda E. Sharp (501) 682-0916,
Arkansas Department of Pollution Control & Ecology*

On April 20, 1989, an explosion occurred in the waste heat recovery unit due to equipment failure. This unit was fairly old and built up excessive pressure which caused structure failure. As a result, the unit exploded. The explosion occurred during normal operations, and no injuries or significant releases were reported. The incinerator unit did not sustain extensive damage. The waste heat recovery unit was shut down, and the rest of the plant was back up and operating under normal conditions within one week.

Two injuries were reported following a trailer fire on August 16, 1990, that also resulted in the evacuation of approximately 50 people in an adjacent neighborhood. A drum of nitrocellulose based film is believed to have spontaneously combusted and spread to 30 ten-gallon containers of the same material.

On March 27, 1991, an explosion occurred in the Komar drum shredder causing the pressure relief doors to open and emit gases. One person was injured as a result of the incident. The explosion and fire followed a feed of four drums containing acid sludge, water-based coatings and debris that included paper filters, plastic, absorbent cloth and personal protective equipment contaminated with solvents and petroleum oil.

On March 30, 1991, a fire broke out when a 30-gallon drum failed to drop from the automatic feed ram into a kiln and instead was pushed into another drum by the feed ram. This caused liquids to be released which created a fire and quickly spread to two more drums on the feed line. No injuries were reported.

On May 25, 1991, liquid leaking from a kiln shredder isolation gate caught fire in the catch pan. No injuries were reported. Feed of waste to the shredder and kiln had to be stopped to allow maintenance below the catch pan.

Flames vented from the charging door of a shredder air lock on August 14, 1992. At approximately the same time a light detonation occurred in the control enclosure located immediately below the air lock. The detonation caused the doors of the enclosure to fling open. The immediate cause of the fire was the simultaneous opening of both air lock doors which allowed mixing of combustible gases with air.

A fire occurred in the kiln shredder auger machine on July 28, 1993, when dirt and debris contaminated with an oxidizer were fed to the unit. After the fire, an inspection revealed that an 85-gallon drum of the same waste stream had a five-gallon bucket packed inside of a 30-gallon drum containing dirt and debris. Six drums which contained oxidizers were found in their waste stream.

On August 10, 1993, another incident occurred when a container being moved to an incinerator warehouse autodegraded, causing a release. A worker left the cap off of a container that was filled with bromine and chlorine. The contents of the container reacted with the air, causing a spontaneous reaction. The container then combusted, which caused the fire. No injuries resulted from the combustion.

On December 12, 1994, an explosion occurred in the kiln shredder auger machine waste feed system when a 2300 pound container of spent oxygen breathing apparatus canisters was dropped into the unit. The waste had been mislabeled. Three injuries were reported as a result of the explosion and ensuing fire. The entire feed system was a total loss and other structural damage was reported.

On March 25, 1995, a fire occurred in a kiln shredder building when vapors from a 250-pound box of non-RCRA aerosol containers escaped and caused a flash of flames. The vapors escaped through a faulty mechanical seal on the shredder slide gates and then to the containment chamber housing the shredder slide gates. One employee was injured as a result of the incident.

On August 4, 1995, a fire occurred in the special handling facility when elemental phosphorous overheated and splattered on combustible packaging. The fire spread within a small room to the wall and ceiling. Material handlers unsuccessfully attempted to cover the phosphorous with dry sand. One injury was reported as a result of the incident.

Chemical Waste Management, Inc. (CWM), Port Arthur, Texas

Contact: David Barker, Texas Natural Resources Conservation Commission (512) 239-2510

There have been two incidents at the permitted CWM facility in Port Arthur. One of the incidents occurred in June 1992, and was described as a kiln fire that resulted from overheating during normal operation.

The second incident occurred on December 24, 1992, when one gallon of Incinerator Air Pollution Control Train (APC) waste leaked from a storage container in a truck staging area. Workers at CWM assumed the release consisted of PCBs and immediately initiated a cleanup. CWM secured the area and cleaned up all visible signs of the waste. In areas where the waste had penetrated cracks in the asphalt, the asphalt and underlying soil was removed until no signs of the waste remained. Tests of the released material indicated that the waste did not contain PCBs.

See Attachment 9 for additional information.

Rollins Deer Park, Deer Park, Texas

Contact: David Barker, Texas Natural Resources Conservation Commission (512) 239-2510

An incident occurred at this permitted facility in November 1991, when a fire broke out in the furnace duct of the combustion chamber. The plant shut down as many vents as possible and allowed the facility to cool down for a few days. A new duct was installed and the unit was running again in about five days.

REGION VII

Regional Summary

There have been reported incidents at four RCRA permitted incinerators in Region VII. These facilities include: the Monsanto Company in Muscatine, Iowa, the Lake City Army Ammunition Plant in Independence, Missouri, the Aptus facility in Coffeyville, Kansas and ICI Explosives Environmental Company in Joplin, Missouri. These incidents included a fire and several explosions. Detail summaries are provided below.

There has been one incident reported at a TSDF (International Paper in Joplin, Missouri) in Region VII. It involved a release of water contaminated with wood preserving wastes. The facility is now closed. A detailed summary is provided below.

International Paper, Joplin, Missouri

Contact: Robert Morrison, Missouri Department of Natural Resources (314) 751-3191

International Paper is a closed TSDF. On October 1, 1992, water contaminated with wood treating wastes was released during a transfer from one closed surface impoundment to another. The release occurred when the hose used to transfer the water broke and water continued to pump into the environment for a short period of time. It is estimated that, at most, 30,000 gallons of water was released to the environment. The Agency does not have information on the concentration of the waste in the water that was released. The hose leak was corrected, and the facility has since made operational changes to make sure the pump is under personnel surveillance at all times.

Monsanto Company, Muscatine, Iowa

Contact: Ken Herstowski, EPA Region VII (913) 551-7058

In July 1992, the permitted incinerator at the Monsanto facility was shut down while the facility's process unit was being repaired. When the incinerator was brought back on line there was a loss of quench water flow which caused the temperature in the fiberglass scrubber to approach 2000 degrees Fahrenheit. As a result, the unit's scrubber caught fire. Although organics such as chlorobenzene and dichlorobenzene are usually treated in the unit, only natural gas was in the incinerator at the time of the incident because the unit was just being brought on line. There was no release of hazardous waste to the environment. There were also no injuries reported. Since the incident, the facility has updated its controls (e.g., valves and sensors) to better identify losses of water pressure.

Lake City Army Ammunition Plant, Independence, Missouri
Contact: John Smith, EPA Region VII (913) 551-7845

An incident occurred at the permitted Lake City Army Ammunition Plant incinerator on March 29, 1991. Live rounds of ammunition had been put through the incinerator, but were not completely treated. When the rounds came out of the back of the incinerator they fell off of the conveyer belt and were set off. The incident occurred during the trial burn. There were no injuries recorded. The facility no longer processes the type of bullets that were involved in this incident and as a result has imposed more strict controls of the waste feed to the incinerator.

Aptus, Coffeyville, Kansas
Contact: John Smith, EPA Region VII (913) 551-7845

The incident at this permitted facility occurred in the fall of 1990 during normal operations. A waste drum with an exceedingly high Btu mixture of PCB-contaminated paint waste was introduced to the incinerator. Gas accumulated in the ionized wet scrubber and was set off by a spark. The explosion occurred in the scrubber, not in the incinerator itself. The explosion was completely contained within the unit. The unit's air pollution control devices were damaged internally, and the unit was out of operation for about one week. No injuries or natural resource damages were reported. Since the material had gone through the entire thermal combustion process, no hazardous waste was released. However, air emissions may have exceeded particulate and HCl emissions standards due to the damage to the pollution control device. Since this incident, the facility has instituted tighter controls on its waste sampling and feed procedures, and no longer accepts wastes with a high Btu content.

ICI Explosives Environmental Company, Joplin, Missouri
Contacts: John Smith, EPA Region VII (913) 551-7845 and Kyle Russell, Missouri Department of Natural Resources (573) 751-3176

There have been three incidents involving explosions at this facility since it began operating in 1995. None of the incidents resulted in releases to the environment.

The first incident occurred during start-up in 1995 when there was an unexplained explosion in the rotary kiln. The incinerator was operating as interim status until the final permit was issued in March 1996.

The second incident also involves an unexplained explosion in the rotary kiln on April 3, 1997. It was assumed that a round of ammunition was left in the kiln and that it exploded, causing ammonium nitrate to react.

A third explosion occurred on August 26, 1998 in the storage area of the feed handling building. The explosion occurred when workers were removing detonator components from a container onto a flat table. One person was killed and two others were injured as a result. No fire suppression was required for this incident. There was no obvious cause for the explosion.

See attachment 10 for additional information.

REGION VIII

Regional Summary

There have been no reported incidents at combustion facilities in Region VIII.

There has been only one reported incident in Region VIII at a TSDF. This release occurred at the United States Pollution Control Incorporated (U.S.P.C.I.) Grassy Mountain facility in Tooele County, Utah. A detailed summary is provided below.

United States Pollution Control Incorporated (U.S.P.C.I.) Grassy Mountain Landfill, Tooele County, Utah

Contact: Terry Brown, EPA Region VIII (303) 293-1823

On September 16, 1988, a truck delivered a load of hazardous waste to the U.S.P.C.I. Grassy Mountain facility. The shipment was supposed to contain only solid waste, because U.S.P.C.I. is prohibited from disposing liquid waste. However, when the truck was opened, approximately 50 gallons of an unknown liquid hazardous waste spilled into the landfill. The State inspected the site after the incident and determined that no remediation would be required. Monitoring indicated that there was no damage to the landfill liners and no ground-water contamination. The facility was permitted at the time of the incident.

REGION IX

Regional Summary

There have been reported incidents at one combustion facility in Region IX at the Johnston Atoll Chemical Agent Demilitarization System (JACADS) facility, three of which involved a release of hazardous substances.

Reports at three commercial TSDFs in Region IX have also been reported. One incident took place at Statewide Environmental Services, Inc., which is a transfer and storage facility. The second incident took place at a storage and recycling facility owned and operated by the Oil and Solvent Processing Company, which was later acquired by Chemical Waste Management. The third incident occurred at Chem-Tech Systems. All three facilities are located in the Los Angeles area. A fourth incident at the Rhone Poulenc Basic Chemical Company industrial furnace facility in Martinez, California was also reported.

Johnston Atoll Chemical Agents Demilitarization System (JACADS), Johnston Island
Contacts: Larry Bowerman (415) 744-2051 and Ray Fox (415) 744-2053, EPA Region IX and Cathy Massimino, EPA Region X (206) 553-4153

The JACADS incinerator was permitted in 1985 and is designed to destroy the U.S. stockpile of Chemical weapons being stored on Johnston Island. These weapons all contain nerve agents or blister agents. There have been a number of incidents at the JACADS incinerator since December 1990. These incidents are as follows:

- ! In December 1990, during shutdown of the Liquid Incinerator (LIC), agent GB (a nerve agent) was sensed in the duct leading from the LIC pollution abatement system. The source of the agent was a short-term leakage from the agent feed system after feed shut off. The period of emissions was about 45 minutes, and emission levels from the stack were about 25% of what is allowed in the state permit. Following the incident, the facility implemented changes in its operating procedures.
- ! On March 11, 1991, smoke filled the Deactivation Furnace System (DFS) room and some smoke escaped to the atmosphere through the stack. No agent was being processed at the time. The incident was attributed to an instrumentation malfunction; the defective instrument was replaced following the incident.

- ! On May 2, 1991, there was a small bearing cooling oil fire, caused by an overheated bearing, in the DFS room. Agent was not being processed at the time, and there were no reports of harmful releases.
- ! On June 26, 1991, the Dunnage Incinerator (DUN) was in start-up mode with nonhazardous waste when a pressure transient occurred resulting in deformation of the furnace chamber and building. The DUN underwent trial burn testing in January 1995 and is being prepared for full-scale operations.
- ! On January 21, 1992, the DFS kiln stopped rotating while processing VX (a nerve agent) rockets, and the system shut down. The incident was attributed to a hole found in the kiln cylinder wall (apparently caused by detonation of rocket parts near the kiln wall). No releases were reported. The unit is housed in a building where ventilation air is routed through a carbon filter system. The Army installed a new kiln with thicker walls and redesigned the flights to decrease the likelihood of rocket parts becoming lodged in the kiln.
- ! On December 18, 1992, there was a wind storm which resulted in a spill onto coral near Building 888 of 50 gallons of xylene, 1.6 gallons of hexane and 0.6 gallons of isopropanol. The contingency plan was implemented and soil (coral) sampling was performed.
- ! On December 27 and 28, 1992, power outages caused a loss of ventilation in the Munitions Demilitarization Building (MDB) for four separate short periods. The facility implemented the contingency plan, but no agent migration outside the MDB was noted.
- ! On December 28, 1992, the Depot Air Monitoring System (DAMS) detected elevated readings that were traced to a leaking GB rocket in Igloo No. 750. The report indicated that the amount of leakage was small and presented no hazards to human health or the environment outside the facility.
- ! On January 2, 1993, a fire in the Explosion Containment Room (ECR) occurred. A hazardous materials team extinguished the fire with CO₂ and then water. Investigations indicated that this incident did not involve any of the incinerators, but only a small part of the rubber/fiberglass conveyor belt. As a result, operational verification testing (OVT) for the Metal Parts Furnace (MPF) was delayed approximately 45 days. The facility also made various changes, including the installation of a deluge system.
- ! On May 31, 1993, there was a potential release of agent HD (mustard gas) of 0.012 mg/m³ outside the MPF building (the allowable stack concentration is 0.03 mg/m³). The incident occurred when a tray containing the residue of waste material exited the building. The Army was unable to determine whether the alarm was triggered by a low-level agent release, products of incomplete combustion (PICs), or other interferences. The facility temporarily suspended processing of projectiles and waste material in the MPF.

- ! On December 9, 1993, a spill of about 500 pounds of agent GB occurred inside the Munitions Demilitarization Building (MDB). There was no agent migration outside the building and the contingency plan was not activated. The facility suspended processing of munitions until investigation of the incident was satisfactorily completed.
- ! On March 14, 1994, a small fire occurred in the ECR. The fire was caused by a migration of hot gases up the DFS feed chute that resulted when the two feed gates jammed in the open position. There was no migration of hazardous waste inside or outside the facility. The Army committed to take corrective measures to prevent recurrence.
- ! On March 23, 1994, the automatic continuous air monitoring system (ACAMS) detected a stack emission concentration of agent GB above the allowable concentration of 0.0003 mg/m³. The emissions exceeded the limit for about 25 minutes, with a maximum concentration of 0.0315 mg/m³. The incident occurred after the LIC had been shut down for maintenance and while the agent gun was being removed. All weapon processing was suspended pending the outcome of the investigation. The investigation indicated that the incident was caused by inadequate system design and operating procedures, combined with equipment malfunction and operator error. The investigative team estimated that a total of 10 to 12 mg of agent GB had been emitted from the stack and that maximum ground-level concentrations were below the General Population Limit (GPL). After this incident, the Army instituted numerous additional safeguards to prevent future releases. Since then, the JACADs facility has shown significant improvement.

See Attachment 11 additional information.

Rhone Poulenc Basic Chemical Company, Martinez, California

Contacts: Robert Bornstein (415) 744-2298 and Larry Bowerman, EPA Region IX (415) 744-2051

On June 22, 1992, this facility had an industrial accident and chemical fire/release. A release of corrosive sulfonation acid sludge containing spent sulfuric acid and petroleum sludge resulted in an explosion and fire. Local fire agencies worked all day to control the chemical release and suppress the fire with fire fighting and acid-suppressing foam.

Region IX reported that Rhone-Poulenc did not aggressively restrict access to the impacted area. A Pacific Gas and Electric worker was seriously injured when he unknowingly came in contact with corrosive sludge. EPA demanded that Rhone Poulenc adhere to OSHA regulations.

Upon inspection of the damaged area, EPA detected elevated air concentration levels of hydrogen sulfide and sulfur dioxide. The inspection team also found that a ruptured line was releasing acidic water into a bermed area that was close to capacity. Rhone also had allowed several workers to work in the area without respiratory protection. EPA recommended that a contractor immediately remove the acidic water from the bermed area.

Rhone Poulenc's remediation plan called for analysis of the fire water runoff and sludge for pH, total hydrocarbons, and flash point. After characterizing the materials, the facility used vacuum trucks to transfer the runoff and sludge to a holding pond.

EPA reported that Rhone lacked organization and structure to adequately address the situation. It appeared that the facility had never practiced its emergency contingency plans.

NOTE: The facility produced commercial-grade sulfuric acid by burning spent sulfuric acid and sulfur in an industrial furnace. It has never operated as a commercial TSD under RCRA. Although the sulfur containing compounds had characteristics of hazardous waste, they were specifically exempted from the definition of a hazardous waste under State and Federal regulations. At the time of this product release, the facility had an application in for a new RCRA incinerator permit that was being reviewed by EPA and the State of California. The permit application was subsequently withdrawn on August 31, 1992.

See Attachment 12 for additional information.

Statewide Environmental Services, Inc., Los Angeles, California
Contact: Larry Bowerman, EPA Region IX (415) 744-2051

An incident occurred at this commercial transfer/storage facility on May 21, 1991, when solidified organic peroxides were being transferred to a polyethylene drum for incineration. The consolidation of these materials resulted in an unexpected reaction that caused a release of water vapor and carbon dioxide. In addition, some solid material within the drum spilled into a containment area. Statewide Environmental Services implemented its contingency plan and the spill was contained, cleaned up and placed in a 30-gallon polyethylene drum for disposal. Four personnel from Nash Salvage, the company working at the facility on the day of the incident, complained of health effects and were taken to a hospital and released the same day. Since the incident, the facility no longer consolidates organic peroxides or any other materials from lab packs.

See Attachment 13 for additional information.

Oil and Solvent Process Company (OSCO), Azusa, California
Contact: Larry Bowerman, EPA Region IX (415) 744-2051

On April 21, 1989, this recycling and storage facility had a 9,611 gallon spill of wastewater containing 1.28 percent solvents, most of which were acetone. The spill occurred when a hose detached from a portable pump to which wastewater was being transferred. The spill spread to adjacent industrial land, and approximately five gallons traveled onto a public road, where the spill was contained. The spilled wastewater did not enter any drains or waterways, and 2,300 gallons were recovered by using on-site vacuum trucks and absorbent. A consultant removed the contaminated soil, covered the area with Visqueen (a commercial product), and tested the area to ensure that the contamination had been removed. OSCO reviewed procedures and made modifications to prevent future occurrences. According to the facility, the successful containment and on-site response action averted any threat to human health or the environment. This facility is now owned by Chemical Waste Management, Inc.

See Attachment 14 for additional information.

Chem-Tech Systems, Los Angeles, California

Contact: Yolanda Garza, Department of Toxic Substances Control (818) 551-2955

On August 29, 1994, this permitted commercial TSDf had a release of nitrous oxide emissions from a scrubber in the inorganic processing area. Acute emissions lasted between 20 minutes and one hour, and appeared to be the result of the off-loading of a tanker containing water with chrome (pH 5) into Tank M-3, which contained mixed acids. Solids in the tank were agitated during the unloading process, which caused a chemical reaction that led to the release.

Upon detection of the emissions, the facility notified the fire department and evacuated all personnel. The plant was shut down and only the scrubbers were left in operation. Once the cause of the release was identified, the fire department's hazardous materials team entered the facility to monitor ambient air and collect a laboratory sample.

Chem-Tech demonstrated to the satisfaction of the fire department that the mixture in Tank M-3 could be neutralized and treated in the facility's treatment systems. Chem-Tech has reviewed its tank cleaning schedule and has developed a new schedule for certain tanks, including Tank M-3.

See Attachment 15 for additional information.

REGION X

Regional Summary

There have been no reported incidents at combustion facilities in Region X.

The incidents reported in Region X occurred at several commercial TSDFs. They include: Chemical Waste Management in Arlington, Oregon; Northwest EnviroService in Seattle, Washington; Sol-Pro and ChemPro both in Tacoma, Washington; Phillips Environmental-Pier 91 in Port of Seattle, Washington and Washington Chemical in Spokane, Washington. Incidents at these facilities occurred as a result of various activities such as mixing incompatible hazardous waste, processing oil wastes, spills of hazardous waste and oil mixtures, and welding activities.

Chemical Waste Management of the Northwest, Inc. (CWMNW), Arlington, Oregon
Contacts: Fredrick Moore and Mike Renz,
Oregon Department of Environmental Quality (503) 388-6146

On May 5, 1994, at 10:00 p.m., a Chemical Waste Management (CWMNW) security guard discovered a fire inside Landfill L-13. The guard notified the Emergency Coordinator. The fire was contained and extinguished in the landfill by 1:00 a.m. on May 6, 1994. CWMNW reported the incident to the Oregon Department of Environmental Quality and EPA at 8:15 a.m. Disposal records indicated that wood debris was placed in relative proximity to stabilized, heat-generating waste streams of which CWMNW claimed are normally segregated. In its incident report, CWMNW stated that it would take the following actions to prevent recurrence:

- Supplement the Landfill L-13 operating procedures to clarify that heat-generating waste was to be separated from combustible materials;
- Retrain the operations staff on operating procedures;
- Study ways to identify heat-generating loads of waste by using an infrared thermometer and thermocouple thermometer probe; and
- Conduct a fire brigade training session for all fire team personnel.

The facility was permitted at the time of the incident.

See Attachment 16 for additional information.

Northwest EnviroService (NWE), Seattle, Washington

***Contacts: Barb Smith (206) 649-7019 and Jeannie Summerhays (206) 649-7055,
Washington State Department of Ecology***

Northwest EnviroService (NWE) is a commercial TSD facility located 1.5 miles from the city of Seattle on Highway I-5. The facility has had four incidents since 1988, all of which occurred while the facility operated under interim status. In 1988 a fire broke out at the facility when welding sparks ignited fumes from a below-grade exempt cinder block pit covered by a wooden structure. This pit contained oily bilge water from boats. No injuries or natural resource damage resulted from the incident, but the highway was shut down until the fire was brought under control.

There was another incident at this facility in October 1989. It involved the processing of oil wastes from the Exxon Valdez spill. Workers in a building across the street from the facility complained about fugitive emissions, and several of the workers were hospitalized.

On March 28, 1992, facility personnel mixed incompatible waste in a stabilization unit. The mixing generated heat, flames, and toxic fumes. The facility did not promptly report the incident, and the State issued a citation.

On February 14 and 15, 1994, 5,500 gallons of a hazardous waste and oil mixture spilled from a bulk container at a transfer facility into a storm drain. The waste proceeded to migrate to the Duwamish River via a nearby wetland. NWE claimed that the spill was an act of sabotage, because the accident could not have occurred unless a seal, lock, and valve were all opened in succession. A NWE employee discovered the spill at 7:50 a.m. on February 15, 1994, when he noticed a sheen on the parking lot. NWE put up barriers to divert the spill around storm drains and notified the National Response Center, Washington Department of Ecology, and the Seattle Fire Department all by 9:30 a.m. Initial response activities involved boom and pad deployment in the wetland channel and a holding pond. Vacuum trucks removed products from the holding pond and the wetlands, and a contractor conducted cleanups at the Duwamish River. Although the location of the spill occurred under EPA jurisdiction, because EPA was not on the scene, the U.S. Coast Guard served as the Federal Incident Commander. Response actions over the first two days consisted of the following:

- Stabilizing the site and containing the spill;
- Defining response strategies and priorities;
- Conducting a spill investigation;
- Notifying authorities and coordinating response activities;
- Dye testing of the storm drain system from the NWE site to the wetlands;
- Spill documenting and sampling;
- Surveilling and tracking the spill; and
- Developing a long-term cleanup plan and planning cycle.

NWE had provided only limited security in the tank area before this incident occurred. Since the incident, NWE has proposed to put up a security fence, put in lighting in the tank area, and has hired a 24-hour security guard until the fence can be installed. NWE also has proposed installing a valve at the storm drain to prevent releases from migrating from the site. The Department of Ecology has assessed a penalty of \$91,000 against NWE.

According to State officials, the facility does not have a RCRA permit and will be ceasing all hazardous waste management activities.

See Attachment 17 for additional information.

Sol-Pro, Tacoma, Washington

Contact: Dave Bartus, EPA Region X, (206) 553-2804

In approximately 1991, Sol-Pro removed a feed tank from a solvent recycling still in order to refurbish the tank. The contractor performing the work, received explicit directions to abstain from any welding work on the tank, but did not follow these instructions. The welding on the exterior of the tank ignited fumes inside the tank, resulting in an explosion that damaged some equipment and caused a very small release of fugitive emissions. The force of the explosion cut off an electricity transmission line and temporarily shut down Sol-Pro and two neighboring facilities. Sol-Pro and a neighboring facility implemented their contingency plans. No injuries were reported.

The State also cited the facility for fugitive emissions from solvent recyclers, evaporators, and process vents containing acetone, toluene, and lacquer thinner, and from a hopper that contained empty chemical drums. No physical or health related problems were reported. There was some documented data of releases to surface water from leaking vats and/or containers. The facility has installed a flare to burn off any emissions.

The facility was not permitted at the time of these incidents.

ChemPro, Tacoma, Washington

Contact: David Polivka, Washington State Department of Ecology, (206) 407-6345

In 1987, this interim status facility experienced a 10,000-gallon spill of chromic acid that leaked through a loose valve. The facility is a treater of metal-bearing waste through solidification and precipitation. The facility performed a soil cleanup and agreed to more rigorous inspections to prevent recurrence. The facility is now under a corrective action order for past waste management practices, including storage of oil in and operating unlined surface impoundment.

Phillips Environmental - Pier 91, Port of Seattle, Washington

Contacts: Jack Boller (206) 753-9428 and Jeannie Summerhays (206) 649-7055, EPA Region X

In 1990, when the facility was owned by ChemPro, welders working at an old Navy tank farm/waste oil facility ignited fumes in an empty tank. One worker was killed and fugitive emissions were reportedly released. The State investigated the incident. The facility was not permitted at the time of the incident.

Washington Chemical, Spokane, Washington
Contact: Jack Boller, EPA Region X, (206) 753-9428

In March/April of 1990, workers at the Washington Chemical facility mixed several incompatible characteristic (reactive and/or ignitable) wastes and sealed them into a 55-gallon drum. An explosion resulted, launching the drum into the air and across several hundred feet of the facility, spraying the waste in all directions during its flight. The drum landed outside the facility in the middle of a street intersection. No injuries were reported, and only minor property damage occurred. The facility was permitted at the time of the incident.

The facility did not implement its contingency plan, nor did it report the release. The release was reported by a neighboring business. Consequently, the Washington Department of Ecology investigated the incident and assessed a \$60,000 penalty against Washington Chemical. The state hearing board upheld Ecology's fine, but the company has appealed the decision.

Summary of Incidents at Combustion Facilities and Other TSDF Listings

Region I

No facilities

Region II

Eastman Kodak Company (Incinerator)
Kodak Park, New York

Bridgeport Rental and Oil Services (BROS) (Superfund Incinerator)
New Jersey

Rollins Environmental Services, Inc. (TSDF)
Logan Township, New Jersey

Region III

Mill Service (TSDF)
Yukon, Pennsylvania

Delaware Container Company (TSDF)
Coatesville, Pennsylvania

Region IV

ThermalKEM (Incinerator)
Rock Hill, South Carolina

Laidlaw Environmental Services (Thermal Oxidation Corporation) (Incinerator)
Roebuck, South Carolina

U.S. Department of Energy (Incinerator)
Oak Ridge, Tennessee

Diversified Scientific Services, Inc. (DSSI) (BIF)
Kingston, Tennessee

Region IV (continued)

LWD (Incinerator)
Clay, Kentucky

Carolina Solite (TSDF)
Norwood, North Carolina

Southeastern Chemicals (TSDF)
Sumter, South Carolina

Laidlaw Environmental Services (GSX Laidlaw Landfill) (TSDF)
Pinewood, South Carolina

Safety-Kleen Lexington Recycling Center (TSDF)
Lexington, South Carolina

Holnam/Safety-Kleen (TSDF)
Holly Hill, South Carolina

CP Chemicals (TSDF)
Sumter, South Carolina

Albright and Wilson (TSDF)
Charleston, South Carolina

E.I. DuPont de Nemours (Incinerator)
Axis, Alabama

Chemical Waste Management, Inc. (CWM) (Commercial TSDF)
Emelle, Alabama

Fisher Industrial Services, Inc. (Commercial TSDF)
Glencoe, Alabama

Region V

Dow Chemical Company (Incinerator)
Midland, Michigan

Chemical Waste Management, Inc. (CWM) (Incinerator)
Chicago, Illinois

Region V (continued)

Ross Incineration Services, Inc. (Incinerator)
Grafton, Ohio

Waste Technologies Industries (WTI) (Incinerator)
East Liverpool, Ohio

Trade Waste Incineration (part of CWM) (Incinerator)
Sauget, Illinois

3M (Incinerator)
Cottage Grove, Minnesota

Region VI

Ensco (Incinerator)
El Dorado, Arkansas

Chemical Waste Management, Inc. (CWM) (Incinerator)
Port Arthur, Texas

Rollins Deer Park (Incinerator)
Deer Park, Texas

Region VII

International Paper (TSDF)
Joplin, Missouri

Monsanto Company (Incinerator)
Muscatine, Iowa

Lake City Army Ammunition Plant (Incinerator)
Independence, Missouri

Aptus (Incinerator)
Coffeyville, Kansas

ICI Explosives Environmental Company (Incinerator)
Joplin, Missouri

Region VIII

United States Pollution Control Incorporated (U.S.P.C.I.) Grassy Mountain Landfill (TSDF)
Tooele County, Utah

Region IX

Johnston Atoll Chemical Agents Demilitarization System (JACADS) (Incinerator)
Johnston Island

Rhone Poulenc Basic Chemical Company (TSDF)
Martinez, California

Statewide Environmental Services, Inc. (TSDF)
Los Angeles, California

Oil and Solvent Process Company (OSCO) (TSDF)
Azusa, California

Chem-Tech Systems (TSDF)
Los Angeles, CA

Region X

Chemical Waste Management of the Northwest (CWMNW) (TSDF)
Arlington, Oregon

Northwest EnviroService (NWE) (TSDF)
Seattle, Washington

Sol-Pro (TSDF)
Tacoma, Washington

ChemPro (TSDF)
Tacoma, Washington

Phillips Environmental (formerly ChemPro) (TSDF)
Pier 91, Port of Seattle, Washington

Washington Chemical (TSDF)
Spokane, Washington