
SIX-MONTH UPDATE TO:

**REDUCTION OF
TOXICS LOADINGS TO
THE NIAGARA RIVER FROM
HAZARDOUS WASTE SITES
IN THE UNITED STATES:
JUNE 1994**

*A Report by the United States Environmental Protection Agency
and the New York State Department of Environmental Conservation*

December 1994

In June 1994, EPA and DEC issued their annual report on the status of remediation of the 26 U.S. hazardous waste sites responsible for 99.9% of the potential loading of toxics from such sites to the Niagara River. Reflecting our commitment to report to the public on the status of these sites every six months, the following is an amendment to that report, on the sites where remediation milestones have come due since the release of the report.

BACKGROUND

In 1987, the Four Parties committed to a 50% reduction of the loadings of persistent toxic chemicals from non-point sources to the Niagara River, by the end of 1996. Hazardous waste sites were considered the most significant non-point source of toxics to the Niagara River. Therefore, in 1989, EPA and DEC identified the 24 waste sites responsible for 99.9% of the estimated potential loading from all such sites in the basin and put them on ambitious cleanup schedules. Remediation of these sites is intended to virtually eliminate the migration from the sites of not just the ten toxics for 50% reduction, but all pollutants.

EPA and DEC are pleased to report that remedial actions at eight waste sites have already substantially reduced the total estimated loadings from the sites to the Niagara River. At some sites, final remedies are in place; at others, interim actions have been instituted to start the cleanup process. In some cases, loading reductions can be estimated for interim actions; in all cases, loading reductions can be estimated for final actions. Estimated reductions for interim and final actions taken to date account for 25% of the total estimated loading from all sites.

At Occidental Chemical - Buffalo Avenue, interim actions resulted in an estimated 33% reduction in migration of toxics from the site. (This equates to a 16% total reduction of estimated loadings from all sites). Interim actions at DuPont's Necco Park account for another estimated 3% reduction of loads from all sites, and interim and final actions at four other sites account for another 6% reduction. For one of these sites (DuPont-Buffalo Avenue), all remediation is in place.

Beyond the 25% load reduction estimated from these six sites, substantial, but as yet unestimated, reductions in loadings have occurred at the Occidental - Hyde Park, and Occidental Durez - North Tonawanda sites. Full remedial construction at the Hyde Park site is to be completed this year.

By the end of 1996, scheduled remedial actions will reduce the estimated toxics loading from all sites by 89%.

We recognize that other sources of the chemicals of concern may exist (e.g., contaminated sediment in tributaries), and we are continuing to identify and clean up those sources. For example, the cleanup of Gill Creek is estimated to have eliminated the

largest known source of PCBs to the Niagara River and Lake Ontario. Virtual elimination of the migration of toxics from identifiable non-point sources, such as the waste sites and Gill Creek, is intended to reduce the total non-point source loads by more than 50% by the end of 1996.

EPA and DEC have committed to report semi-annually on progress in cleaning up these sites, as well as on the identification and remediation of other non-point sources. This is our December 1994 report.

Appendix A presents updated status reports for the sites where scheduled target dates have come due since June 1994. The projected final remediation dates for each of these sites remain unchanged from the last report.

HIGHLIGHTS OF RECENT ACTIONS

Occidental - Buffalo Avenue

- o Occidental Chemical completed the barrier wall along the Niagara River this fall. This restricts migration of contaminated groundwater through the overburden from the site.
- o Wells have been pumping Dense Non-Aqueous Phase Liquids (DNAPL) from the bedrock, and more than 5,000 gallons have been recovered so far. The DNAPL is being incinerated at Occidental's hazardous waste facility.
- o The Corrective Measure Implementation (CMI) design for the bedrock groundwater remedial system was approved on October 26, 1994. Construction of this system has begun.

Niagara County Refuse

- o The PRPs began remedial design in December '94. The ROD specifies that the design will include:
 - full cap with a complete perimeter clay barrier wall,
 - leachate collection and offsite treatment and disposal,
 - gas venting,
 - an ecological assessment of the adjacent wetlands,
 - removal of the tile drains located to the west of the landfill, and
 - long-term operation and maintenance.

Du Pont - Necco Park

- o The Investigation Report was approved on schedule in May 1994.

- o Du Pont estimates that approximately 118 million gallons of groundwater have been pumped since 1983. Since 1989, 6,600 gallons of DNAPL have been recovered, containing approximately 88,000 pounds of organic compounds.

CECOS

- o Monitoring has confirmed that the following interim measures have been working successfully to recover contamination from the site:
 - Removal of 24,000 cubic yards of soil contaminated with PCBs, other organic compounds and metals from the Scrapyard Area.
 - On-site treatment of contaminated groundwater from 21 recovery wells.
- o Remedy selection, due in December '94, will enhance the present interim recovery system which has been working successfully in all three contaminated groundwater zones.

Hyde Park

- o All remedial systems for the overburden and bedrock will be operating by the end of 1994. Ongoing monitoring will be used to ensure the systems' effectiveness.
- o Excavation of contaminated sediments and soils from Bloody Run Creek was completed in 1993. Samples taken at the bottom and sides of Bloody Run Creek confirmed the effectiveness of the excavation and removal of the 29,200 cubic yards of contaminated sediment.
- o The final element of the remedial action plan, the capping of the entire landfill, has been completed.

Bell Aerospace

- o The final remedy has been implemented, and technical problems, which initially delayed the full operation of the system, have been resolved (Nov '94).

Occidental Chemical - Durez Division, Niagara Falls

- o The Remedy Selection is due December 1994. EPA and DEC have tentatively determined that the existing groundwater recovery systems already operating as interim corrective measures, as demonstrated in the PRP's interim reports, are capable of serving as the final remedy. No slip in the final implementation date is expected.

Olin

- o The RCRA Facility Investigation (RFI) report and Corrective Measures Study (CMS) workplan for soil and shallow groundwater has been approved for Phase I.
- o Discovery of DNAPL in one of the monitoring wells led to implementation of interim corrective measures by Olin in May and June 1994. The extent of the problem turned out to be minimal and the amount of DNAPL that was recovered and removed was less than 2 gallons.

APPENDIX A

REMEDIAL ACTIVITIES AND SCHEDULES
NIAGARA RIVER HAZARDOUS WASTE SITES
for which milestones were due
between June and December 1994

ACRONYMS

APL - Aqueous phase liquids
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act of 1979
CMI - Corrective Measure Implementation
CMS - Corrective Measure Study
DDT - primarily 1,1'-(2,2,2-trichloroethylidene)-bis/4 chlorobenzene
DEC - New York State Department of Environmental Conservation
EC Environment Canada
EPA - U.S. Environmental Protection Agency
HSWA - Hazardous and Solid Waste Amendments
MOE - Ontario Ministry of the Environment
NAPL - Non-aqueous phase liquids
NRTMP - Niagara River Toxics Management Plan
OCC - Occidental Chemical Corporation
PCBs - Polychlorinated biphenyls
PRP - Potentially Responsible Party
PVC - Polyvinyl chloride
RCRA - Resource Conservation and Recovery Act
RFA - RCRA Facility Assessment
RFI - RCRA Facility Investigation
RI/FS - Remedial Investigation/Feasibility Study*
RRT - Requisite Remedial Technology*
TCDD - Tetrachlorodibenzo-p-dioxin
TCP - Trichlorophenol

* the RI defines the areal and vertical extent of the hazardous waste problem at a Superfund site through numerous sampling wells, an extended environmental sampling program and a full geophysical survey. Based on the RI, the FS develops and evaluates alternative solutions to the problem. An RRT is the equivalent of an FS for a pre-CERCLA agreement.

OCCIDENTAL CHEMICAL BUFFALO AVENUE PLANT
Site #41b - 49

Site Program: RCRA (State and Federal)
Summary Prepared by: EPA and DEC

Occidental Chemical Corporation completed certain interim corrective measures required under the Resource Conservation and Recovery Act (RCRA): removal and capping of contaminated soils, installation of a barrier wall, collection of DNAPL from bedrock wells, installation of fences, removal of spills from secondary containment areas, and removal of fly ash accumulated on the ground. DEC and EPA issued Occidental Chemical Corporation a state Part 373 permit and an EPA Hazardous and Solid Waste Amendments permit under RCRA in June 1988, permitting the storage/treatment and incineration of hazardous wastes.

Pursuant to the permits, Occidental completed most of the on-site components of a RCRA Facility Investigation (RFI) by November 1992. Due to the complexity of site conditions, the remedial program activities for the facility have been subdivided into several components, which address the bedrock groundwater, overburden groundwater, overburden soils, and off-site groundwater contamination. Implementation of these elements of the remedial program are specified in an August 1993 DEC Part 373 permit modification, and are prioritized based on both the completion date of the associated RFI components and the significance that each of the remedial programs has on reducing the potential loadings to the Niagara River from the site.

Bedrock Groundwater: The permits issued in 1988 were revised to require implementation of a bedrock pump-and-treat system, which is expected to be wholly implemented and operational by October 1995. Three bedrock wells have collected, to date, more than 5,000 gallons of DNAPL from the site. The DNAPL is incinerated in Occidental Chemical's hazardous waste incinerator.

Overburden Groundwater: Concurrent with the development of the bedrock pump-and-treat system, Occidental is evaluating possible Corrective Measures to address overburden groundwater contamination.

At one time, groundwater infiltration into the on-site industrial waste sewer system was a significant source of contamination to the river. However, Occidental has been replacing and repairing pipes since the early 1980s.

In addition, Occidental installed a barrier wall in the fall of 1994 along the Niagara River to prevent migration of overburden groundwater contamination into the Niagara River.

Overburden Soils and Off-site Groundwater: As interim corrective measures, Occidental identified and removed 36 tons of liquid mercury from contaminated soils on-site in U-Area, and capped dioxin-contaminated soils in X-Area. The scheduled start-ups of the overburden soil remedy and the off-site groundwater remedy are June 1997 and December 1997, respectively.

The current schedule for implementation of a corrective action program at the plant, including Corrective Measure Study (CMS) and Corrective Measure Implementation (CMI), follows. The scheduled project milestones relate to complete on- and off-site investigation and remediation. However, completion of partial CMI work will be targeted during the program.

Future off-site loadings from the Buffalo Avenue site will be effectively eliminated by the start-up of the bedrock groundwater stabilization program, by October 1995, and the start-up of the overburden groundwater stabilization program, by December 1996.

OCCIDENTAL CHEMICAL - BUFFALO AVENUE PLANT

Output	Responsible Party	Previous Target Date	Current Schedule
RFI Workplan Approval	DEC/EPA	Jun 1991	COMPLETED
RFI Completion	Permittee	Dec 1992	COMPLETED
CMS Workplan Approval	DEC/EPA	Jun 1993	COMPLETED
CMS Completion Bedrock Groundwater	Permittee	Aug 1993	COMPLETED
CMS Completion (Revised) Overburden Groundwater	Permittee	Aug 1994	Dec 1994
CMS Completion Overburden Soil	Permittee	Aug 1995	Aug 1995
CMS Completion Off-Site (Groundwater)	Permittee	Feb 1996	Feb 1996
Remedy Selection Bedrock Groundwater	DEC/EPA	Dec 1994	COMPLETED
Remedy Selection Overburden Groundwater	DEC/EPA	Dec 1994	Feb 1995
Remedy Selection Overburden Soil	DEC/EPA	Dec 1995	Dec 1995
Remedy Selection Off-Site (Groundwater)	DEC/EPA	Jun 1996	Jun 1996
CMI Workplan Approval Bedrock Groundwater	DEC/EPA	Nov 1994	COMPLETED
CMI Workplan Approval Overburden Groundwater	DEC/EPA	Jun 1995	Jun 1995
CMI Workplan Approval Overburden Soil	DEC/EPA	Jun 1996	Jun 1996
CMI Workplan Approval Off-site (Groundwater)	DEC/EPA	Dec 1996	Dec 1996
Start-up: Stabilization* Bedrock Groundwater	Permittee	Oct 1995	Oct 1995
Start-up: Stabilization* Overburden Groundwater	Permittee	Dec 1996	Dec 1996
Start-up Stabilization Overburden Soil	Permittee	Jun 1997	Jun 1997
Start-up: Stabilization Off-site (Groundwater)	Permittee	Dec 1997	Dec 1997
Start-up of CMI	Permittee	Dec 1997	Dec 1997

* Implementation of the Bedrock and Overburden Stabilization will effectively eliminate future off-site loadings from the Main Plant Site.

NIAGARA COUNTY REFUSE DISPOSAL

Site # 81

**Site Program: Federal Superfund
Summary Prepared by: EPA**

Niagara County Refuse is an EPA-lead site on the National Priority List of Superfund sites. Pursuant to a March 1989 consent order, a group of fourteen Potentially Responsible Parties (PRPs) performed a Remedial Investigation/Feasibility Study (RI/FS) for the site, which was completed in September 1993 upon EPA's signing of a Record of Decision for the site. Among other things, the Remedial Investigation Report indicated that the three water-bearing zones beneath the site showed either a negligible impact from volatile and semi-volatile organic compounds and pesticides, or no impact at all. Maximum contaminant levels were generally exceeded in the site groundwater for chromium, iron, manganese, and sodium (although iron and sodium levels in regional groundwater typically exceed maximum contaminant levels). Also, based on these findings, the original loadings estimate for this site is considered by EPA to be too high and a more accurate loadings estimate will be calculated based on new sampling data.

Upon completion of the RI/FS but prior to signing the Record of Decision for the site, EPA issued a Proposed Plan, selecting a full NYCRR part 360 cap with a complete perimeter clay barrier wall, leachate collection and offsite treatment and disposal, gas venting, an ecological assessment of the adjacent wetlands, removal of the field tile drains located to the west of the landfill, and long-term operation and maintenance. A Record of Decision was executed on September 24, 1993 which involved all the aspects of the Proposed Plan.

Negotiations between the PRPs and EPA for remedial design and remedial action were completed in September 1994. Thirteen PRPs have reached agreement with EPA to complete remediation of the site. An additional eleven de-minimus PRPs made financial contributions to the cleanup. An updated schedule for remediation of the site follows. Delays in the RI/FS schedule and RD/RA schedule were due to lengthy negotiations with the PRPs.

NIAGARA COUNTY REFUSE DISPOSAL

Output	Responsible Party	Previous Target Date	Current Schedule
RI/FS	14 PRPs	Mar 1993	COMPLETED
Record of Decision	EPA	Sep 1993	COMPLETED
Remedial Design Start	13 PRPs	Jul 1994	Dec 1994 ²
Remedial Action Start	13 PRPs	Dec 1995	Mar 1996 ²
Remedial Action Completion	13 PRPs	Sep 1996	Dec 1996 ²

¹ Firm target date.

² Target date, subject to change upon issuance of a consent decree with the PRPS.

DUPONT NECCO PARK

Site # 14

**Site Program: Federal Superfund
Summary Prepared By: EPA**

Necco Park is not on the National Priority List. However, Du Pont has conducted groundwater investigations pursuant to a RCRA 3013 consent decree. Du Pont entered into an Administrative Order on Consent with EPA to conduct further groundwater investigations and to study on-site remediation of ground water and non-aqueous phase liquids.

The Du Pont Necco Park site was capped in 1978. Since 1982, two recovery wells, near the center of the property, have recovered contaminated groundwater and established a partial hydraulic barrier in the upper bedrock and overburden along the southern edge of the landfill. However, some upper bedrock groundwater continued to flow south toward the Niagara River. In order to improve containment and collection of contaminated groundwater, an upgradient grout curtain was installed in the bedrock in August 1989. A third recovery well, which penetrates the lower bedrock at the southern boundary of Necco Park, went into limited operation in 1992. This, together with the other two pumping wells, has reduced the off-site loading rate by 27% to 55%, based on information collected in the RI.

The portion of the groundwater not recovered by the on-site pumping wells is probably captured by the New York Power Authority conduits, which drains to the Falls Street Tunnel, or the Falls Street Tunnel directly. All the dry-weather flow through the Fall Street Tunnel is treated by the Niagara Falls Wastewater Treatment Plant before discharge to the river.

The remedial investigation began May 1991 and the Investigation Report was approved in May 1994. It is anticipated that the feasibility study (FS) (entitled "Analysis of Alternatives Report") and the Proposed Plan will be completed in March 1995. EPA will then issue a Record of Decision (ROD), anticipated by June 1995. The remediation already done on-site has resulted in a load reduction from the site of approximately 27% to 55%. Du Pont estimates that approximately 118 million gallons of groundwater have been pumped since 1983. Since 1989, 6,600 gallons of DNAPL have been recovered, containing approximately 88,000 pounds of organic compounds.

A current schedule for remediation of the site follows.

DUPONT NECCO PARK

Output	Responsible Party	Previous Target Date	Current Schedule
RI	PRP	May 1994	COMPLETED
FS	PRP	Sept 1994	Mar 1995 ¹
Record of Decision	EPA	Dec 1994	Jun 1995 ²
Remedial Design Start	PRP	Mar 1995	Nov 1995 ³
Final Remedial Action Start	PRP	Jun 1996	Dec 1996 ³
Remedial Action Completion			
- Grout Curtain		---	COMPLETED
- 3 Pumping Wells		---	COMPLETED
- Final Action		Jun 1997	Jun 1997

¹ Firm target date.

² Target date dependent on completion of RI/FS by PRPs.

³ Target date subject to change upon issuance of Record of Decision.

CECOS INTERNATIONAL
Site # 78

Site Program: RCRA (State and Federal)
Summary Prepared by: EPA and DEC

The site encompasses approximately 50 Solid Waste Management Units, including landfills, waste piles and surface impoundments. An EPA HSWA permit and state Part 373 permit were issued in September 1988, requiring investigation/remediation of all waste management units.

Pursuant to the requirements of the RCRA permit, in September 1991, CECOS completed the required investigations at the facility. Groundwater contaminants were mainly detected in the central area of the site, in the three groundwater transmissive zones monitored by CECOS. The volatile organic compounds (VOC) detected include acetone, 2-butanone, benzene, chloroform, toluene, chlorobenzene, methylene chloride, and tetrachlorethane.

An interim groundwater recovery system has been pumping contaminated groundwater from all three zones since 1990. The recovery system was started with four recovery wells and currently consists of 21 recovery wells. The pumped groundwater is treated on-site and discharged to the City of Niagara Falls wastewater treatment plant. From January 1991 through March 1994, 26 million gallons of groundwater have been treated, and 978 pounds of organic compounds were removed, over 75 percent of which was acetone.

Final corrective measures were implemented for the Scrapyard Area in 1992. The final remedy was incorporated into the NYSDEC/EPA permit modification of September 1991 and consisted of removal and off-site disposal of approximately 24,000 cubic yards of soil contaminated with PCBs, organic compounds and metals, construction of a low permeability cover and long-term inspection and maintenance of the cover, and monitoring of the groundwater.

In addition, several interim measures consisting of the removal of contaminated soils and wastes have been completed at the following units: surface impoundments, phenolic resin area, and sewage sludge area. Post-closure permit/HSWA modification for the closed hazardous waste landfills was issued in September 1991. A RCRA Facility Investigation (RFI) and a Corrective Measures Study have been completed. A remedy will be selected in December 1994.

All of the interim remedial actions that have come due at this site have been accomplished. An updated schedule for implementation of a corrective action program at the site, including Corrective Measure Implementation (CMI), follows. Completion of these outputs is dependent primarily on two

factors: (1) the nature and extent of contamination found on- and off-site, (and thus the complexity of the remedial measures required); and (2) the best efforts of all parties in the planning and implementation of the work. The scheduled project milestones relate to complete on- and off-site investigation and remediation.

CECOS INTERNATIONAL

Output	Responsible Party	Previous Target Date	Current Schedule
RFI Workplan Approval	DEC/EPA	Sep 1989	COMPLETED
RFI Completion	Permittee	Sep 1991	COMPLETED
Stabilization Start-up (Groundwater)	Permittee		COMPLETED
Start-up of CMI (Scrapyard)	Permittee		COMPLETED
CMS Workplan Approval	DEC/EPA	Apr 1992	COMPLETED
CMS Completion	Permittee	Apr 1993	COMPLETED
Remedy Selection (site-wide)	DEC/EPA	Jun 1994	Dec 1994 ¹
CMI Workplan Approval (site-wide)	DEC/EPA	Sep 1994	Apr 1995 ²
Start-up of CMI (site-wide)	Permittee	Oct 1995	Oct 1995 ²

¹ Firm target date

² Target date dependent, in part, on completion of previous milestones.

HYDE PARK
Site # 39

Site Program: Federal/State Co-lead: Superfund
Summary Prepared by: EPA

A good deal of remediation, as summarized below, has taken place at the site, substantially reducing off-site migration. Since installation of an overburden remediation system in 1991, groundwater in the overburden is no longer migrating horizontally past the remediation system around the site. Therefore, no loading of hazardous substances from the site to the Niagara River via groundwater in the overburden is currently taking place.

The site is a joint EPA/DEC-lead Superfund site on the National Priority List and is governed by a pre-CERCLA settlement agreement. EPA sued to require Occidental to remediate the site in 1979. In January 1981, EPA, DEC, and Occidental filed a Stipulation and Judgment Approving Settlement Agreement, and since 1982, Occidental has been implementing the settlement agreement. Agreement on a Requisite Remedial Technology was approved by the court in 1986. The RRT includes:

- * Source Control (prototype extraction wells);
- * Containment and collection of contaminants in the overburden (overburden barrier collection system) and the Lockport bedrock (purge and recirculation wells);
- * An Intermediate and Deep Formations Study (monitoring wells);
- * A Community Monitoring Program (monitoring wells) for early detection of plumes;
- * An Industrial Protection Program for neighboring industries;
- * Treatment and monitoring of collected leachates:
 - Aqueous-phase liquids to be treated on-site;
 - Non-aqueous phase liquids to be destroyed by incineration at OCC's Buffalo Ave. Plant;
- * Site Capping;
- * Gorge Face Seep Remediation to isolate seeps from the public;
- * A TCDD bioaccumulation study in Lake Ontario; and
- * Bloody Run Creek Excavation.

Major remedial activities:

<u>Action</u>	<u>Start</u>	<u>Complete</u>
Intermediate Formation Wells	10/88	12/89
Leachate Storage Facility	-	05/89
Leachate Treatment Facility	-	04/90
Lagoon Closure	07/90	-
Phase I Source Control Extraction Installed	04/90	06/90
Overburden Barrier Collection System	-	11/90
NAPL Plume Redefinition	04/90	07/90
Phase I Prototype Purge Wells Installed	04/90	07/90
Recirculation Wells	01/91	03/91
Cluster Monitoring Wells	06/90	09/90

The status of activities included in the schedule follows.

Community Monitoring Wells provide early detection of chemical migration. They are sampled and analyzed quarterly to ensure the safety of the community. The well data confirm that the hydraulic gradient near the community is downward, thereby ensuring that chemical migration toward the community is not an issue.

Under the Industrial Protection Program, sumps in neighboring industries have been sealed, as have some manholes. Annual inspections are conducted to maintain the integrity of this program.

Fences prevent access to the Gorge Face seeps; seep water has been diverted into culverts and pipes to prevent humans from exposure to the potentially contaminated water, and contaminated sediments were scraped away. Annual inspections are being conducted, and repairs made as appropriate.

Occidental's Niagara Plant Incinerator permit was modified by EPA and DEC in November 1990 to allow destruction of NAPL from Hyde Park (and other Occidental sites). This was the first commercially-owned incinerator in the U.S. specifically permitted to destroy dioxin wastes.

The on-site Leachate Storage and Handling Facility was completed in April 1990. One hundred and fifty-five thousand gallons of NAPL which had been stored on-site in the lagoons and four railroad tank cars were pumped into the leachate storage facility and the lagoons were closed in January 1992.

The Treatment Facility was completed in December 1989 and was brought on-line in April 1991. The contaminants collected through the remedial systems are treated on-site. Aqueous-phase

liquids pass through an inclined plane settler, filters, and sacrificial carbon pre-treatment to remove dioxins and PCBs. This is followed by biological and activated carbon treatment. All vapors in the closed system are treated, and NAPL is destroyed in the incinerator at OCC's Buffalo Avenue Plant.

The Overburden Barrier Collection System, a drain system around the entire landfill, was installed in 1990 and Occidental continuously operates its pumps, preventing the migration of contaminants through the overburden.

Installation of two thirty-six inch diameter Source Control extraction wells within the landfill itself was completed in June 1990. Phased pump tests were conducted and evaluated throughout 1991 and 1992. Based on the results of these pump tests, six additional source control wells of smaller diameter were installed in the landfill in 1994. These additional wells will be equipped with two-phase flow submersible pumps which should enhance the flow of NAPL into these Source Control wells. The NAPL collected by these wells is pumped by forcemains into the Leachate Treatment Facility's NAPL storage tank.

The Lake Ontario TCDD bioaccumulation study was completed in May 1990. Fish and sediment samples from Lake Ontario were analyzed for TCDD, and a laboratory study of the uptake of TCDD by lake trout was conducted.

The extent of the aqueous-phase liquid/non-aqueous phase liquid plumes in the overburden and bedrock were redefined.

The objective of the bedrock NAPL plume containment system is to create a "zone of capture" around purge wells down gradient of the landfill so that contaminated ground water can be collected in these purge wells and pumped to the Leachate Treatment Facility. The bedrock purge well system was installed in a phased approach. Phase I of the system was installed in the NAPL plume area and pump test were performed on individual and multiple wells. Based on these tests, addition purge wells were installed in late 1993. Pump tests were performed on the Phase II wells in early 1994 to determine if there is an adequate zone of capture surrounding these wells. Occidental recently submitted the results of these pump tests, which EPA and DEC are currently reviewing.

Excavation of Bloody Run Creek began in October 1992 and was completed in March 1993. Occidental removed 29,200 cubic yards of contaminated sediment and lined the creek bed with rocks. Samples taken at the bottom and sides of the excavation confirmed the effectiveness of this remedy.

The sewer under University Drive adjacent to Niagara University was sealed and a new sewer was installed in 1993. A sewer was

relocated at Tams Ceramics, a neighboring industrial plant in 1989, and the College Heights sewer was remediated in 1990.

The perimeter cap of the landfill was completed in 1991, and ground water from the overburden was contained. Complex site conditions and difficulties with the pumps in the prototype NAPL pump system have delayed remediation somewhat. However, the entire landfill has now been capped, Bloody Run Creek is excavated, and by December 1994, all remedial systems for the overburden and bedrock will be operational. Remedial efforts now focus on operating, monitoring and adjusting the systems to ensure remedial effectiveness.

HYDE PARK

Output	Responsible Party	Target Date	Current Schedule
Remedial Action Completed for Bloody Run Creek	PRP	Jan 1993	Completed
Remedial Action Completion	PRP	Dec 1994	Dec 1994

BELL AEROSPACE TEXTRON

Site # 5

Site Program: RCRA (State and Federal)
Summary Prepared by: EPA and DEC

Bell Aerospace Textron is a RCRA site with a closed surface impoundment. The company excavated 1225 tons of contaminated soil and capped the area in 1987.

All of the remedial actions at this site that have come due have been accomplished on schedule. A RCRA Facility Investigation (RFI) has determined the extent of contaminant migration and a Corrective Measures Study (CMS) has addressed on- and off-site groundwater contamination. A State Part 373 post-closure permit was issued to Bell Aerospace in September 1992. The permit required final Corrective Measures Implementation (CMI), consisting of groundwater pump-and-treat programs for on- and off-site contamination.

Designed to intercept the bedrock groundwater that is migrating off-site toward the Niagara River, a remedial program is being implemented which consists of the installation of groundwater extraction wells. The off-site Remedial System was started up in April 1993. Additional extraction wells have been installed to contain the on-site groundwater and DNAPL contamination, which will be treated by an on-site waste water treatment plant. The on-site remedial system began operating in May 1994. Due to unanticipated technical problems with the groundwater treatment system, full operation was delayed until November 1994. When these corrective measures are implemented, all contaminated groundwater is expected to be intercepted and treated on-site and virtually no loading will leave the site.

An updated schedule for implementation of a corrective action program at the site follows.

BELL AEROSPACE TEXTRON

Output	Responsible Party	Previous Target Date	Current Schedule
RFI Workplan Approval	DEC/EPA	May 1990	COMPLETED
RFI Workplan Approval for Phase II	DEC/EPA	None	COMPLETED
RFI Completion	Permittee	Jul 1991	COMPLETED
CMS Workplan Approval	DEC/EPA	Dec 1991	COMPLETED
CMS Completion	Permittee	May 1992	COMPLETED
Remedy Selection	DEC/EPA	Oct 1992	COMPLETED
CMI Workplan Approval (off-site)	DEC/EPA	Apr 1993	COMPLETED
CMI Workplan Approval (on-site)	DEC/EPA	Sep 1993	COMPLETED
Start-up of CMI (off-site)	Permittee	Apr 1996	COMPLETED
Start-up of CMI (on-site)	Permittee	Nov 1994	COMPLETED

OCCIDENTAL CHEMICAL - DUREZ DIVISION, NIAGARA FALLS**(formerly BTL SPECIALTY RESINS)**

Site # 66

Site Program: RCRA (State and Federal)**Summary Prepared by: EPA and DEC**

Three recovery wells commenced pumping in February 1989 to capture and remediate the groundwater under the site. These recovery wells affected groundwater flow in the overburden and the upper bedrock aquifers. Most of the contaminated groundwater from the uppermost bedrock aquifer and from the aquifer below it is captured by the purge wells.

In May 1990, DEC issued Occidental Chemical Corporation (OCC) a state Part 373 Operation Permit for storage, treatment, and incineration on-site. An EPA Hazardous and Solid Waste (HSWA) permit was issued in March 1991, requiring corrective action. As required by the permits: (1) Four carbon- steel tanks were installed to replace a 30,000 gallon hazardous waste storage tank; (2) The incinerator was modified with a larger burner, an expanded combustion chamber, a new double-layered refractory, a new control system, an automatic alarm and waste feed cut-off systems, and new instrumentation and piping. Prior to operation, a trial burn was conducted; and 3) Approximately 3000 tons of phenolic-contaminated soil was removed in 1990. Additional areas with contaminated soils were capped.

The RCRA Facility Investigation (RFI) workplan was approved in May 1990 and completed in November 1992. The main area of chemical presence is beneath the tank farm area on the east side of the facility. The predominant overburden and bedrock groundwater contaminants are total recoverable phenolics, ethylbenzene, total xylenes, 1,2-dichlorobenzene, and 1,4-dichlorobenzene. The vertical extent of groundwater contamination is limited to the overburden and the first three bedrock aquifer zones. With the exception of the tank farm area, chemical concentrations in the soils were less than action levels for soil ingestion. The soils are not a significant source of groundwater contamination; nevertheless, all open spaces on the site have been paved over. As an interim corrective measure, OCC is pumping bedrock ground water contaminated with phenols and other organics (primarily non-chlorinated solvents) to its recently constructed biological treatment facility, prior to discharge to the Niagara Falls Wastewater Treatment Plant. EPA and DEC require OCC to submit interim reports to assess whether groundwater is being remediated adequately, and to assess the need for modifications, such as in pumping rates or the installation of additional wells. The groundwater pumping rate was doubled in 1990 with the addition of new treatment capacity at OCC's treatment facility which was constructed that year.

Also, as an interim corrective measure to address the overburden groundwater contamination at the tank farm area, an overburden drain tile collection system was installed in 1990. The purged water is pretreated in the on-site wastewater treatment facility, prior to discharge to the Niagara Falls Wastewater Treatment Plant.

The Corrective Measures Study report has been approved. EPA and DEC have tentatively determined that the existing groundwater recovery systems which have been operating as interim corrective measures are capable of serving as the final groundwater remedy for the facility.

The remedial actions that have come due at this site have been accomplished ahead of schedule, and Corrective Measure Implementation is anticipated by December 1995. The schedule for implementation of the corrective action program, including Corrective Measure Implementation (CMI), follows. The scheduled project milestones relate to complete on- and off-site investigation and remediation.

OCC DUREZ, NIAGARA FALLS

Output	Responsible Party	Previous Target Date	Current Schedule
RFI Workplan Approval	DEC/EPA	Jul 1990	COMPLETED
RFI Completion	Permittee	Sep 1992	COMPLETED
Stabilization Start-up	Permittee		COMPLETED
CMS Workplan Approval	DEC/EPA	Jun 1993	COMPLETED
CMS Completion	Permittee	Dec 1993	COMPLETED
Remedy Selection	EPA/DEC	Jun 1994	Dec 1994 ¹
CMI Workplan Approval	EPA/DEC	Feb 1995	NO CHANGE ²
Start-up of CMI	Permittee	Dec 1996	DEC 1995 ²

¹ Firm target date.

² Target date, dependent on completion of previous milestones.

SOLVENT CHEMICAL

Site # 251

Site Program: N.Y. Division of Hazardous Waste Remediation
Summary Prepared by: DEC

The Solvent Chemical site occupies approximately 6 acres in the City of Niagara Falls. The site is located about 1/4 mile north of the Niagara River.

The Solvent Chemical plant site has been used for manufacturing operations at various times from 1941 to 1978 by DuPont, Hooker Chemical and Solvent Chemical. DuPont and Hooker produced impregnite; Solvent Chemical manufactured chlorinated hydrocarbons, zinc chloride and ammonium chloride. Chemicals disposed on site include zinc, benzene and chlorinated benzenes.

The Solvent Chemical site is a DEC/Department of Law-lead site. The RI was completed in June 1991. Despite lengthy negotiations, the Potentially Responsible Parties did not agree to undertake the Feasibility Study. Therefore, the site has been referred to State Superfund for completion of the RI/FS, while the Attorney General's office litigates the matter. Field work for the feasibility study was completed in August 1994, and the RI/FS Investigation report is due by early December. The ROD is scheduled for March 1995. An updated schedule for remediation of the site follows.

SOLVENT CHEMICAL

Solvent Chemical	Responsible Party	Previous Target Date	Current Schedule
RI	PRPs	Dec 1990	COMPLETED
RI/FS	DEC	Sep 1994	Dec 1994 ¹
Record of Decision	DEC	Dec 1994	Mar 1995
Remedial Design	PRPs	Dec 1995	Dec 1995 ²
Remedial Action	PRPs	Dec 1996	Dec 1996 ²

¹ Firm target date.

² Preliminary target date, dependent on negotiation of an order with PRPs.

OLIN CORPORATION
Site #58, 59

Site Program: RCRA (State and Federal)
Summary Prepared by: EPA

In 1984, EPA issued Olin Corporation a RCRA permit to operate the hazardous waste storage and treatment facilities on this site, but since it was issued before the Hazardous and Solid Waste Amendments to RCRA were enacted, it did not incorporate corrective actions. Permitted units were closed in 1990, according to a DEC-approved closure plan. EPA issued an order in September 1989, requiring investigation of releases throughout the site, and particularly from the brine mud storage area, where releases have occurred.

Olin has conducted soil and hydrological studies and submitted a draft RFI report and several supplemental RFI reports to the EPA/DEC. Olin has completed the final phase of the RFI, and the final RFI report was submitted to EPA and NYSDEC in August 1994. It is now being reviewed.

Mercury was detected in the soils in concentrations up to 1,210 parts per million. Volatile and semi-volatile organic constituents and pesticides were also identified in the soils. Sampling of twenty-four overburden and bedrock wells identified volatile and semi-volatile constituents, pesticides, and mercury at levels exceeding federal and State groundwater standards.

An EPA/DEC-approved DNAPL interim corrective measure (ICM) was implemented by Olin during May and June 1994. The program was intended to identify and characterize any DNAPL presence in five Olin monitoring wells and to remove any DNAPL encountered. DNAPL was only detected in one well and a total volume of less than two gallons was removed.

Former Olin production wells are currently being used to pump and treat groundwater from the site through an agreement with the adjacent DuPont facility. The Olin wells serve as part of DuPont's bedrock groundwater remediation program and exert a large radius of influence over the Olin site, which effectively reduces the total toxic load migrating from the Olin site.

Olin is a Potentially Responsible Party (PRP) for the off-site remediation of Gill Creek, which was completed in December 1992. Contaminated sediment was removed, and the creek has been restored.

The DEC will issue an Order on Consent which will require Olin to complete the CMS and implement corrective measures.

An updated schedule for implementation of a corrective action program, including Corrective Measure Implementation (CMI), follows. The scheduled project milestones relate to complete on- and off-site investigation and remediation. However, completion of a phased RCRA Facility Investigation (RFI) and CMI work is being targeted during the program.

OLIN CORPORATION

Output	Responsible Party	Previous Target Date	Current Schedule
RFI Workplan Approval	DEC/EPA	Apr 1990	COMPLETED
RFI Completion (Phase I)	Permittee		COMPLETED
RFI Completion (Phase II)	Permittee	Jun 1993	Dec 1994 ¹
Stabilization Start-up (Groundwater)			COMPLETED
CMS Workplan Approval (Phase I)	Permittee		COMPLETED
CMS Workplan Approval (Phase II)	DEC/EPA	Sep 1993	COMPLETED
CMS Completion	Permittee	Mar 1995	Mar 1995 ²
Remedy Selection	DEC/EPA	Jul 1995	Jul 1995 ²
CMI Workplan Approval	DEC/EPA	Jan 1996	Jan 1996 ²
Start-up of CMI Initiation/Stabilization	Permittee	Dec 1996	Dec 1996 ²

Note: Phase I - Overburden soil and groundwater
Phase II - Bedrock groundwater

¹ Target date firm.

² Target date dependent on completion of previous milestones in the corrective action process.

BUFFALO COLOR CORPORATION
Site # 120, 122

Site Program: RCRA (State and Federal)
Summary Prepared by: EPA and DEC

EPA issued consent orders to Buffalo Color Corporation in 1985 and 1989, requiring groundwater monitoring. A post-closure permit was public noticed in 1992 to address releases. The facility objected to several conditions of the draft permit and requested an administrative hearing. It appears all outstanding issues have been resolved. The proposed final post-closure permit is currently being reviewed for technical, legal and procedural completeness by the NYSDEC Regional office. It is anticipated that the proposed final permit will be sent to the facility by mid-November for concurrence. In the event Buffalo Color does concur with the permit, legal proceedings will be initiated to resolve any outstanding issues. A final decision is expected by mid-December. A RCRA Facility Assessment (RFA) Preliminary Review and Visual Site Inspection were completed during 1986 and 1988, respectively. Eight (8) Solid Waste Management units (SWMUs) have been identified at the site. Overburden ground water monitoring wells at the impoundments show concentrations of chlorobenzene, dichlorobenzenes, toluene, anilines and phenol above NYSDEC-promulgated ground water standards. An RFA soil sampling program for a container storage area was completed in January 1991. EPA and DEC identified a need to investigate potential releases from both the extensive sewer system and from two inactive buildings at the site. Further corrective action requirements will be determined once additional ground water monitoring data, as required by the post-closure permit, have been received and evaluated.

A scope of work for an RFI has been approved. The scope of work includes a subsurface investigatory program for all areas of the plant except for Area D. Depending on the progress and results of the RFI, it is anticipated that stabilization/interim corrective measures may be initiated by 1996.

The schedule delay for the issuance of the permit and submission of an RFI Workplan is a result of: (1) negotiations with the facility to define the extent of the necessary investigative activities, (2) development and revisions made to the draft RCRA permit, and (3) a delay in the sewer assessment as a result of the disagreement over RCRA statutory authority regarding sewers. Buffalo Color appealed the EPA permit which has also caused schedule delays. All subsequent target dates have been updated to account for these delays. Completion of the RFI and the CMI are dependent, in part, on field conditions encountered, which may delay the overall schedule for corrective action.

BUFFALO COLOR CORPORATION

Output	Responsible Party	Previous Target Date	Current Schedule
RFA Workplan Approval	EPA/DEC	Mar 1990	COMPLETED
RFA Completion	Permittee	May 1990	COMPLETED
RFI Workplan Approval	EPA/DEC	Sep 1994	Mar 1995
RFI Completion	Permittee	Dec 1995	Mar 1996 ¹
Stabilization Start-up	Permittee	Dec 1996	Dec 1996
CMS Workplan Approval	EPA/DEC	May 1996	May 1996 ²
CMS Completion	Permittee	Sep 1996	Sep 1996 ²
Remedy Selection	EPA/DEC	Feb 1997	Feb 1997 ²
CMI Workplan Approval	EPA/DEC	Jul 1997	Jul 1997 ²
Start-up of CMI	Permittee	Dec 1998	Dec 1998 ^{1,2}

¹ Target date, dependent, in part, on field conditions encountered.

² Target date, dependent, in part, on completion of previous milestones.

OCCIDENTAL CHEMICAL CORPORATION - DUREZ, NORTH TONAWANDA
Site # 24 - 37

Site Program: N.Y. Division of Hazardous Waste Remediation
Summary Prepared by: DEC

The Durez site is a DEC-lead site. Remedial activities are being conducted under several consent orders.

Since the 1989 DEC/EPA hazardous waste site report, a groundwater interceptor trench has been constructed around the entire plant to collect contaminated groundwater for treatment at an on-site carbon treatment system. Off-site contaminants in sewers have been removed and are stored pending treatment. Remediation of the Pettit Flume inlet cove, a source of contaminated water and sediment to the Niagara River, is being addressed under consent order. The RI/FS for the cove was completed in December 1991. A Record of Decision for the cove was issued in March 1992 to excavate and treat contaminated soil, sediment, and dense non-aqueous phase liquid (DNAPL), and restore the Inlet Cove as a wetland area. The major elements of the Remedial Action plan, including sediment removal at the cove, pumping of DNAPL, and dredging of the Little Niagara River have been completed. The site is both stabilized and isolated. However, final completion of construction has been delayed because of issues between Occidental Chemical and its contractor. Remedial Action completion is now expected to be June 1995, depending on the outcome of litigation.

A current schedule for remediation of the site follows.

OCC CHEMICAL - DUREZ DIVISION, NORTH TONAWANDA PLANT

Output	Responsible Party	Previous Target Date	Current Schedule
Remedial Construction:			
Plant Site	PRP	Jun 1991	COMPLETED
Sewer Clean-up	PRP	NONE	COMPLETED
Pettit Flume Outlet Cove:			
RI/FS	PRP	NONE	COMPLETED
Record of Decision	DEC	NONE	COMPLETED
Remedial Design	PRP	Sep 1993	COMPLETED
Remedial Action	PRP	Dec 1994	Jun 1995 ¹

¹ Firm target date.