CONESTOGA-ROVERS & ASSOCIATES

2055 Niagara Falls Blvd., Suite #3
Niagara Falls, New York 14304
Telephone: (716) 297-6150 Fax: (716) 297-2265
www.CRAworld.com

Please note that the CRA logo can only be viewed in 'Page Layout' or Print Preview

TRANSMITTAL

DATE: January 19, 2007

REFERENCE NO.: 12635-03-201070

PROJECT NAME: 1001 E. Delavan Avenue

TO: Erie County Public Library
East Delavan Branch
1187 E. Delavan Avenue
Buffalo, NY 14215

Ms. Megan Gollwitzer
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Please find enclosed:
- ☐ Draft
- ☒ Originals
- ☐ Prints
- ☐ Final
- ☐ Other

Sent via:
- ☐ Mail
- ☐ Overnight Courier
- ☐ Same Day Courier
- ☒ Other Hand Delivery January 22, 2007 (C. Barton)

QUANTITY	DESCRIPTION
1 Copy	Citizen Participation Plan, American Axle Plant Site,
	Inactive Hazardous Waste Disposal Site #915196

- ☐ As Requested
- ☒ For Your Use
- ☐ For Review and Comment
- ☐
- ☐

COMMENTS:

Copy to: J. Hartnett, M. Williams, K. Malinowski, K. Galanti **(Transmittal Only)**

Completed by: Christine M. Barton Signed:
[Please Print]

Filing: Correspondence File

CITIZEN PARTICIPATION PLAN

AMERICAN AXLE PLANT SITE
INACTIVE HAZARDOUS WASTE DISPOSAL SITE #915196
1001 EAST DELAVAN AVENUE
BUFFALO, NEW YORK

Prepared For:
General Motors Corporation
Worldwide Facilities Group
Environmental Services Group - Remediation

PRINTED ON:

JANUARY 19, 2007

CITIZEN PARTICIPATION PLAN

AMERICAN AXLE PLANT SITE
INACTIVE HAZARDOUS WASTE DISPOSAL SITE #915196
1001 EAST DELAVAN AVENUE
BUFFALO, NEW YORK

Prepared For:
General Motors Corporation
Worldwide Facilities Group
Environmental Services Group - Remediation

JANUARY 2007
REF. NO. 12635-03-201070 (11)

TABLE OF CONTENTS

Page

LIST OF FIGURES
(Following Text)

LIST OF APPENDICES

1.0 INTRODUCTION AND OVERVIEW OF THE CITIZEN PARTICIPATION PLAN

1.1 WHAT IS A CITIZEN PARTICIPATION PLAN

A Citizen Participation Plan, or CP Plan, provides interested citizens like you with information on how General Motors Corporation (GM), American Axle & Manufacturing, Inc. (AAM), and the New York State Department of Conservation (NYSDEC) will involve the public during the process of remediating (cleaning up) a discrete area below the floor of the AAM manufacturing site that has been placed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites as Site #915196.

The CP Plan identifies information to be communicated to Site neighbors as well as information needed from the community. Additionally, the CP Plan is used to track public involvement activities that must be conducted according to State regulations, such as notifying residents when a remedial action plan is selected.

This CP Plan has been prepared to engage the community in the remedial activities being conducted at the Registry Site located within the AAM Facility, 1001 East Delavan Avenue in Buffalo, New York (Facility). The remedial activities are being conducted to address subsurface contamination (polychlorinated biphenyls [PCB]-impacted oil) beneath a portion of the Facility.

1.2 WHAT DOCUMENTS ARE INCLUDED IN THIS PLAN?

1. Background information about the site and activities occurring there.
2. Information on planned citizen participation activities (see Section 4).
3. Locations where you can find more information ("document repositories") and a list of documents that are available there.
4. A glossary of terms and acronyms that you may encounter while learning about the Site (Appendix A).
5. Fact Sheets about the Site (Appendix B).
6. Fact sheets explaining the steps in the investigation and cleanup process (Appendix C).
7. A list of people interested or involved with the Site ("Mailing List") (Appendix D).

The CP Plan is periodically updated to include new fact sheets, additions to the mailing list, or changes in planned citizen participation activities.

If you would like more information on citizen participation activities, contact Megan Gollwitzer of the NYSDEC at 716-851-7220.

2.0 BACKGROUND INFORMATION

2.1 SITE DESCRIPTION

This Registry Site is located within a discrete area below the manufacturing floor of the Facility owned and operated by AAM, which purchased the Facility from GM in March 1994.

GM owned and operated the Facility from its inception in the 1920s. The main manufacturing building was constructed by GM in the mid 1920s. Several additions have been constructed since that time. GM sold the Facility to AAM in 1994. The primary production activity at the Facility has been, and continues to be the manufacture and assembly of automotive parts and vehicle components.

The AAM property located at 1001 East Delavan Avenue consists of approximately 52 acres. The main manufacturing buildings, Plant Nos. 81 and 83, occupy approximately 19 of these 52 acres. The remaining property consists of a power plant, an auxiliary manufacturing building (Plant 5), an electrical substation, an area of underground storage tanks, parking lots, and other small buildings used mainly for storage. Additional properties to the north, east, and west are currently utilized primarily as parking areas and, for the purposes of this plan, are not considered part of the "Site" or Facility. A Site map is provided as Figure 1 in this report.

Subsurface contamination is present and remedial activities will be focused in areas underlying Plant No. 81 as shown on Figure 1. This portion of the Facility will be referred to henceforth as the "Site".

The Site also includes the portion of the 5 foot by 9 foot Buffalo Sewer Authority (BSA) combined sewer tunnel. This sewer is referred to in the remainder of this report as "the 5x9 Sewer". The 5x9 Sewer traverses the property in a north/south direction from Delavan Avenue to Scajaquada Street. The section of the 5x9 Sewer included as part of the Site is located beneath the Facility approximately under the E Aisle.

2.2 SITE HISTORY

Historically, the Facility was used as an automobile assembly and body plant. Activities associated with this use included painting, welding, plating, and machining operations. Historically, PCBs were a constituent in hydraulic oils and heat transfer fluids used at the Facility.

Limited information exists about activities within the Site. The original southern limit of the structure now referred to as "Plant No. 81" was located at what is now Bay 24 and the majority of the Site was outdoors. Prior to 1930, some or all of the Site was believed to have been an outdoor loading platform. Based on a review of a 1939 Sanborn Fire Insurance Map, the majority of the Site was used at that time for warehousing of finished parts.

Beginning around 1941 and continuing until at least 1965, the area in Plant No. 81 from Bay D-25 to Bay G-36 was used by GM for Heat Treating Operations and, for a period of time, as part of the war effort during World War II. Based on a review of a 1950 Sanborn Fire Insurance Map, the Heat Treating Operations may have extended eastward to Bay A-25 through A-36.

A new Heat Treat Addition was constructed in 1966. This area, located approximately from Bay H-30 to O-37, houses the current heat treating operations. Oils and/or fluids containing PCBs may also have been utilized in this area to a limited extent. Historic sampling and analyses did not reveal PCB presence in soils in this area. The area of the Site from Bay A-25 to G-36 was subsequently used for machining of pinion and ring gears from raw forgings and was commonly known as the Gleason Machine Area.

2.3 SPILLS AND RELEASES

In 1991, during the course of construction activities within the Facility, free oil was observed seeping into a large sump located in Bay B-26. This sump is referred to in the remainder of this report as the "Coolant Pit." The presence of oil in the Coolant Pit was reported to NYSDEC in 1991, and Spill Report No. 9104671 was subsequently assigned.

Oil presence beneath the Facility was identified in soil borings advanced in 1993 and 1994 during due diligence investigations. The presence of oil beneath the Site was addressed in a second Spill Report, No. 9400483, opened in 1994.

AAM discharges its storm water to the BSA under a Buffalo Pollutant Discharge Elimination System (BPDES) Permit issued by BSA. In 2000, AAM experienced an excursion of the oil and grease limits of its BPDES Permit in the effluent of the combined 5x9 Sewer. Additional investigation of the 5x9 Sewer was conducted to determine the source of the oil.

2.4 SITE INVESTIGATION ACTIVITIES

In response to the occurrence of petroleum spills reported to the NYSDEC in 1991 (Spill Report No. 9104671) and 1994 (Spill Report No. 9400483), GM commenced a program of investigations to characterize the impact of these spills on environmental media beneath the Facility. All work was conducted under the oversight of the NYSDEC Spill Response Program. Comprehensive reports of the investigative data were submitted to NYSDEC on behalf of GM by Blasland, Bouck & Lee (BBL) in March 2001 and by Conestoga-Rovers & Associates (CRA) in May 2003.

The results of the investigations performed at the Facility demonstrate that PCB-containing oil is present beneath the Site in the fill, clay, and shallow bedrock units. The results further show that impacts to environmental media (soil and groundwater) are limited and are a result of contact between the media and the PCB-containing oil. The extent of the presence of the PCB-containing oil is generally limited to the Site; however, a potential off-Site transport pathway exists through infiltration into the 5x9 Sewer.

In August 2004, NYSDEC closed the spill response files (Nos. 9104671 and 9400483). On August 31, 2006 GM entered into an Administrative Order on Consent (AOC) with NYSDEC to conduct investigative and remediation work at the Site. AAM also signed the AOC as the owner of the Facility.

Under the AOC, GM submitted the following reports to NYSDEC for review and approval:

i) the Remedial Investigation (RI) Report;

ii) the Feasibility Study (FS); and

iii) an Interim Remedial Measures (IRM) Work Plan (WP).

The RI Report, FS Report, and IRM Work Plan were submitted to the NYSDEC on November 6 and 8, 2006. This information and data was submitted in fulfillment of the requirements for site characterization, remedial investigation, and remedy selection reporting as outlined in the NYSDEC Draft DER-10, "Technical Guidance for Site Investigation and Remediation", dated December 2002 (DER-10).

3.0 UPCOMING REMEDIAL ACTIVITIES

After the NYSDEC determines that the Site has been adequately investigated, NYSDEC in conjunction with the New York State Department of Health (NYSDOH), will propose a final remedial action for the Site. This plan is called a Proposed Remedial Action Plan, or PRAP. This plan will compare different remedial action options that could be taken at the Site and recommend a preferred remedial action based on a series of criteria, such as short and long-term permanence of the selected remedy, cost, and ease of implementation. NYSDEC will solicit public input into the plan.

After considering all comments received, NYSDEC will make a final decision on the proposed remedial action plan and outline the decision in a document called the Record of Decision, or ROD. NYSDEC will include responses to comments they receive from citizens in an appendix in the ROD. More details about the selected remedial plan can be found in the next section of this CP Plan.

4.0 CITIZEN PARTICIPATION ACTIVITIES

To keep the community informed and involved in the process of investigating and remediating inactive hazardous waste disposal sites, NYSDEC requires several citizen participation activities. For example, when a final remedial action plan is proposed (that is, the PRAP), NYSDEC will make it available to the public and allow interested parties 30 days to review and comment on the plan. The NYSDEC will also present the proposed plan at a public meeting and gather comments from citizens at the meeting.

The following table describes these and other citizen participation activities that will take place during the determination of a remedial action plan for the Site. The table also lists the stage in the process at which each activity will take place as well as tentative completion dates. Some citizen participation activities may be performed by NYSDEC and some performed by GM. The project managers will use this table to track required citizen participation activities.

CITIZEN PARTICIPATION ACTIVITIES

Activity	*Activity Will Occur at This Point in the Remedial Program*	*The Activity is Scheduled to be Completed*	*The Activity was Completed:*
Set up document repositories, where citizens can review Site-related documents, at the regional NYSDEC office and a public location near the Site.	Prior to signing of the AOC	July 2005	July 31, 2005
Create a list of people ("Mailing List") interested in the Site, including residents, government representatives, media, and any interested civic, environmental, or business groups	Prior to completion of the CP Plan	July 2005	July 31, 2005
Create a Citizen Participation Plan and place it in document repositories	After the Effective Date of the AOC	September 2006	
Mail a fact sheet to the Mailing List describing activities proposed for the Site	At the start of the remedial investigation	Not applicable in view of the prior investigation conducted under NYSDEC's Spill Response Program	
Mail a fact sheet to the Mailing List describing the results of the investigation	When remedial investigation is complete		

CITIZEN PARTICIPATION ACTIVITIES

Activity	*Activity Will Occur at This Point in the Remedial Program*	*The Activity is Scheduled to be Completed*	*The Activity was Completed:*
NYSDEC will mail a fact sheet to the Mailing List describing the proposed remedial action plan (PRAP) and announcing a 30-day comment period	After the remedial investigation has been completed and NYSDEC has written the PRAP		
Allow the public 30 days to comment on the PRAP	After fact sheet announcing the notice of the PRAP has been mailed		
NYSDEC will hold a public meeting to discuss the PRAP and gather public comments	During the 30-day comment period		
NYSDEC will mail a fact sheet to the Mailing List describing the remedy. NYSDEC will place the ROD, which outlines the final remedy at the document repositories. The ROD will include NYSDEC responses to significant comments received during the comment period. (These responses will appear as an appendix called a "Responsiveness Summary".)	After the ROD is signed		

Depending on citizen interest, NYSDEC may also conduct more citizen participation activities than are required, such as holding additional public meetings or mailing more fact sheets to interested citizens. Community involvement is important to ensure that the concerns of those living and working near the Site are addressed. Additional activities that are currently planned for this Site are listed in the table below.

CITIZEN PARTICIPATION ACTIVITIES

Activity	*Activity Will Occur at This Point in the Remedial Program*	*The Activity is Scheduled to be Completed*	*The Activity was Completed:*
A fact sheet will be mailed when the schedule for the remedial activities has been determined			
A fact sheet will be mailed when the remediation is completed			

5.0 SITE ISSUES AND COMMUNICATION NEEDS

This section of the CP Plan is designed to help GM identify and document site-related issues important to the community near the Site as well as to identify the information needs of the community and NYSDEC. This information will help GM and NYSDEC to implement effectively the citizen participation requirements and to identify any additional citizen participation activities that should be conducted.

1. Below is a list of major issues that GM is aware are of interest to the community surrounding the Site:
   - GM is not aware of any major issues of interest or concern at this time.
2. Below is a list of information GM needs from the community to assist with the Site investigation and determination of an appropriate remedial action response:
   - While no specific information is required at this time, NYSDEC and GM welcome citizen input into the remedial action process.
3. Below is a list of information GM wants to communicate to the community through the citizen participation program:
   - Why the remedial action program is happening;
   - What will happen during the remedial action process; and
   - What will happen after the remediation is complete.

6.0 DOCUMENT REPOSITORIES AND LIST OF AVAILABLE DOCUMENTS

Two locations have been established to provide the public with access to documents and other information generated for the Site:

Erie County Public Library
East Delavan Branch
1187 East Delavan Avenue
Buffalo, New York 14215
716-896-4433

Hours:

- Monday - 12:00 p.m. to 8:00 p.m.
- Tuesday - Closed
- Wednesday - 12:00 p.m. to 4:00 p.m.
- Thursday - 10:00 a.m. - 6:00 p.m.
- Friday - Closed
- Saturday - 12:00 a.m. to 4:00 p.m.
- Sunday - Closed

NYSDEC Region 9 Office
Attn: Megan Gollwitzer
270 Michigan Avenue
Buffalo, New York 14203-2999
716-851-7220

Hours:

- Monday - Friday - 8:30 a.m. to 4:45 p.m. Please call for an appointment.

The following documents are or will be available for review at the repositories:

Document Title	*Dated*
Citizen Participation Plan	January 2007
Remedial Investigation Report	
Feasibility Study	
Interim Remedial Measures Work Plan	
Administrative Order on Consent	
NYSDEC Registry of Inactive Hazardous Waste Disposal Site - Site Information	
Record of Decision	

Additional documents will be placed in the repositories and their availability will be announced to the public as they are developed. The documents are meant to remain at the repository so that anyone who is interested in the Site can have access to them. If you notice a document is missing, please notify Katherine Galanti (CRA) at 716-856-2142.

7.0 LIST OF PROJECT CONTACTS FOR THE SITE

For additional information about the Site Remedial program, we encourage you to contact any of the following people:

i) **New York State Department of Environmental Conservation (NYSDEC)**
Region 9 Office
270 Michigan Avenue
Buffalo, New York 14203-2999
Phone: 716-851-7201
Contact: Jaspal Walia, Project Manager

ii) **New York State Department of Health (NYSDOH)**
548 Delaware Avenue
Buffalo, New York 14202
Phone: 716-847-4385
Contact: Cameron O'Connor

iii) **New York State Department of Health (NYSDOH)**
547 River Street, Room 205
Troy, New York 12180
Contact: Mark VanValkenburg

iv) **General Motors Corporation**
1 General Motors Drive, Suite 2
Syracuse, New York 13206-1127
Phone: 315-432-5023
Contact: Jim Hartnett, Project Manager

v) **General Motors Corporation Consultant**
Conestoga-Rovers & Associates
268 Main Street, Suite 600
Buffalo, New York 14202
Phone: 716-856-2142
Contact: Katherine Galanti, Project Manager

8.0 LIST OF PEOPLE POTENTIALLY INTERESTED IN SITE REMEDIAL PROGRAM

NYSDEC or GM will mail fact sheets to the list of interested parties identified on the Mailing List provided in Appendix D. The list includes:

i) adjacent property owners;

ii) Erie County representatives on the list maintained by NYSDEC Region 9;

iii) local media;

iv) State Assembly and Senate Representatives for the area;

v) any company or regulatory agency representative who will receive mailings; and

vi) Interested Environmental Groups.

The list was developed with the assistance of a NYSDEC Region 9 Citizen Participation Specialist. The adjacent/affected property owner and resident portion of the list is maintained confidentially in project files. If you would like to add someone to the list, please contact Megan Gollwitzer of the NYSDEC at 716-851-7220.

9.0 SITE PAGE FROM NYSDEC REGISTRY (OFFICIAL LIST) OF INACTIVE HAZARDOUS WASTE DISPOSAL SITES IN NEW YORK STATE

NYSDEC maintains an official list, or "registry," of inactive hazardous waste disposal sites across New York State. This list is published annually and includes a summary of information about each site. The Site has been placed on the Registry and is listed as "American Axle Plant Site", Site Number 915196.

N

0 50 150ft

COLORADO AVENUE

NORTHUMBERLAND AVE.

CORNWALL AVENUE

EAST DELEVAN AVENUE

LEGEND

SITE BOUNDARIES FOR AREA COVERED UNDER ORDER ON CONSENT REQUIRING REMEDIATION

figure 1

SITE MAP

FORMER GM-SAGINAW DIVISION BUFFALO FACILITY

Buffalo, New York

12635-03(011)GN-NF001 JUL 08/2005

APPENDIX A

CITIZEN'S GLOSSARY OF ENVIRONMENTAL TERMS AND GUIDE TO ENVIRONMENTAL ACRONYMS

NYSDEC Division of Environmental Remediation's Glossary of Common Acronyms & Abbreviations

More information from this division:

Division of Environmental Remediation
DER's Tips for the Public

Choose a starting letter >>>>

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

A	
ACGIH	American Conference of Governmental & Industrial Hygienists
AFFF	Aqueous Film Forming Foam
AG	Attorney General of New York State
AGC	Annual Guideline Concentration (for Air Toxics)
AGM	Alternative Grading Material
AISI	American Iron and Steel Institute
ALS	Advanced Life Support
ANSI	American National Standards Institute
AOC	Area of Concern
API	American Petroleum Institute
ARAR	Applicable or Relevant and Appropriate Requirement
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASP	Analytical Services Protocol

ASTs	Aboveground Storage Tanks
ATG	Automatic Tank Gauge
ATSDR	Agency for Toxic Substances and Disease Registry - a federal branch of the Center for Disease Control
AWS	American Welding Society
B	Top of Page
BED	Brownfield Eligibility Determination
BHC	Benzene Hexachlorides - a group of pesticides that includes lindane
BLS	Basic Life Support
BNA	Base/Neutral/Acid extractable organics analyzed by GC/MS
BSPR	Bureau of Spill Prevention and Response
BTEX	Benzene, Toluene, Ethyl-benzene and Xylene - major components of gasoline
BTX	Benzene, Toluene, and Xylene, common components of many petroleum based products
BUD	Beneficial Use Determination - exempts a material from regulation, allowing it to be beneficially used.
C	Top of Page
C&D	Construction and Demolition debris
CAA	The Federal Clean Air Act
CAS	Chemical Abstract Service
CBS	Chemical Bulk Storage
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act (1980) - the Federal Superfund law
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
CLP	Contract Laboratory Protocol
CMA	Chemical Manufacturers Association
CMS	Corrective Measures Study

CO	Consent Order
CO	Conservation Officer of the DEC - same as ECO
CO_2	Carbon dioxide
COC	Chemical of Concern
CP	Citizen Participation
CP	Cathodic Protection
CPP	Citizen Participation Plan
CPS	Citizen Participation Specialist
CPR	Cardio Pulmonary Resuscitation
CTC	Canadian Transport Commission
CVOC	Chlorinated Volatile Organic Compound
CWSRF	Clean Water State Revolving Fund
D	Top of Page
DDT	Dichloro-Diphenyl-Trichloroethane (a pesticide)
DEC	Department of Environmental Conservation (New York State) - used interchangeably with NYSDEC or ENCON
DEE	Division of Environmental Enforcement - legal division within DEC responsible for regulatory enforcement
DEP	Division of Environmental Permits - division within DEC
DER	Division of Environmental Remediation (formerly DHWR and DSM) - division within DEC responsible for the Inactive Hazardous Waste Disposal Site Remedial Program, the Voluntary Cleanup Program, the Environmental Restoration (Brownfields) Program, the Spill Prevention and Response Program (including spill remediation, petroleum and chemical bulk storage and major oil storage facility programs), and the Construction Grants program
DFW	Division of Fish and Wildlife - previous name for DFWMR
DFWMR	Division of Fish, Wildlife and Marine Resources (formerly DFW) - division within DEC responsible for

	assessment and management of our natural resources, regulation of hunting and fishing, and fisheries management.
DHWR	Division of Hazardous Waste Remediation - previous name for DER
DNAPL	Dense (heavier than water) Non-Aqueous Phase Liquid
DOD	United States Department of Defense
DOH	Department of Health (New York State) - interchangeable with NYSDOH
DOJ	Department of Justice (United States)
DOL	Department of Law (New York State) - interchangeable with NYSDOL or AGs office
DOT	Department of Transportation (New York State) - interchangeable with NYSDOT
DOW	Division of Water - division within DEC responsible for water pollution control and monitoring of watersheds and waterways
DRO	Diesel Range Organics
DSHM	Division of Solid and Hazardous Materials - division within DEC responsible for regulation of solid and hazardous wastes
DSM	Division of Spills Management (former Division within DEC responsible for Spills Management, now the Bureau of Spill Prevention and Response within DER)
DUSR	Data Usability Summary Report
E	Top of Page
ECL	Environmental Conservation Law
ECO	Environmental Conservation Officer - same as CO
EFC	New York State's Environmental Facilities Corporation
EIS	Environmental Impact Statement
ELAP	Environmental Laboratory Approval Program
EMC	Environmental Management Council (County)
ENB	Environmental Notice Bulletin (DEC weekly

	publication)
EP Toxicity	Also known as EP Tox - An Extraction Procedure test to determine the leachability of selected hazardous chemicals. No longer widely used, it has been replaced by TCLP
EPA	Environmental Protection Agency (U.S.) - interchangeable with USEPA
EPCRA	Emergency Planning and Community Right-to-know Act
EQBA	Environmental Quality Bond Act
ERP	New York's Environmental Restoration Program - also known as the "Brownfields" program
ERP	Emergency Response Plan
ESD	Explanation of Significant Difference
eV	Electron volts
F	Top of Page
FID	Flame Ionization Detector
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FOIA	Freedom of Information Act - Federal
FOIL	Freedom of Information Law - NY State
FRP	Fiberglass Reinforced Plastic
FS	Feasibility Study
FEMA	Federal Emergency Management Agency (U.S.)
FSF	Federal SuperFund
G	Top of Page
GC	Gas Chromatograph
GPM	Gallons per Minute
GRO	Gasoline Range Organics
GW	Groundwater
H	Top of Page
HASP	Health and Safety Plan

Haz Mat	Hazardous Materials
HDPE	High-Density Polyethylene (a widely used chemical resistant plastic)
HMIS	Hazardous Materials Information System
HMTA	Hazardous Materials Transportation Act
HNu	a type of hand held field instrument used to measure Volatile Organic Compounds
HRS	Hazard Ranking System
I	Top of Page
IARC	International Agency for Research on Cancer
ICC	Interstate Commerce Commission
ICM	Interim Corrective Measures
IDL	Instrument Detection Limit
IDLH	Immediately Dangerous to Life or Health - a critical concentration of air contamination
IIWA	Immediate Investigation Work Assignment
IP	Ionization Potential
IRM	Interim Remedial Measures
ISR	Investigative Summary Report
K	Top of Page
kg	kilogram - a unit of mass
L	Top of Page
LC	Lethal Concentration
LD	Lethal Dose
LEL	Lower Explosive Limit (see UEL)
LEPC	Local Emergency Planning Committee
LNAPL	Light (lighter than water) Non-Aqueous Phase Liquid
LNG	Liquified Natural Gas
LPG	Liquified Petroleum Gas - consists primarily of propane

LTTD	Low Temperature Thermal Desorption - treatment technology for contaminated soils
LUST	Leaking Underground Storage Tank
M	Top of Page
MBE	Minority Business Enterprise
MC	Manufacturer's Certificate
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MEK	Methyl Ethyl Ketone
mg/kg	milligram/kilogram - a unit of concentration in solids (equivalent to ppm)
mg/L	milligram/Liter - a unit of concentration in liquids (equivalent to ppm)
MGP	Manufactured Gas Plant
MIBK	Methyl Isobutyl Ketone
MIR	Merchandise Inventory Receipt
MOA	Memorandum of Agreement
MOSF	Major Oil Storage Facility
MOU	Memorandum of Understanding
MS	Mass Spectrometer
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
MTBE	Methyl Tertiary Butyl Ether (gasoline constituent)
MW	Monitoring Well
N	Top of Page
N_2	Nitrogen - typically shipped and used in liquid form
NAPL	Non-Aqueous Phase Liquid
NCP	National Contingency Plan
ND	Not Detected
NEC	National Electrical Code

NFPA	National Fire Protection Agency
NIOSH	National Institute for Occupational Safety and Health
NL	Navigation Law
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NRC	National Response Center
NYCRR	Official Compilation of NY State Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOL	New York State Department of Law
O	Top of Page
O_2	Oxygen
OGS	Office of General Services (New York State)
OPA 90	Oil Pollution Act of 1990
OSHA	Occupational Safety and Health Act (U.S.) or Occupational Safety and Health Administration (U.S.)
O&M	Operation and Maintenance
OSC	Office of the State Comptroller
OSWER	Office of Solid Waste and Emergency Response (EPA)
OU	Operable Unit
OVA	Organic Vapor Analyzer
P	Top of Page
PA	USEPA Preliminary Assessment
PAH	Polynuclear Aromatic Hydrocarbons - a class of chemicals commonly found in tar, asphalt and combustion residues - the same as PNA.
PAPR	Powered Air Purifying Respirator
Pb	Lead

PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyls - a class of chemicals known for persistence in the environment
PCE	Perchloroethylene - one of the most common chemical contaminants, often coming from dry cleaning operations
PCS	Petroleum Contaminated Soil
PEL	Permissible Exposure Limit - an air contaminant level applicable to the work place
Perc	Perchloroethylene - same as PCE
Phase I	A preliminary investigation of site location and history by DEC
Phase II	A preliminary investigation of site conditions, possibly including groundwater, surface water and soils sampling
PID	Photo Ionization Detector
PNA	Polynuclear Aromatic hydrocarbons - the same as PAH
POTW	Publicly Owned Treatment Works - a wastewater treatment plant
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
ppt	parts per trillion
PQL	Practical Quantitation Level
PRAP	Proposed Remedial Action Plan
PRP	Potentially Responsible Party (Also RP)
PRS	Priority Ranking System
PSA	Preliminary Site Assessment
PVC	Poly Vinyl Chloride
Q	Top of Page
QA	Quality Assurance

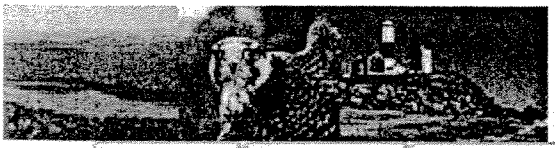
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
QC	Quality Control
QRCL	Qualified Remediation Consultants List
R	Top of Page
RA	Remedial Action
RAMP	Remedial Action Management Plan
RAR	Remedial Alternatives Report - in NY's Brownfields Program
RBCA	Risk-Based Corrective Action
RCRA	Resource Conservation and Recovery Act - federal law that regulates the transfer, storage and disposal of solid and hazardous waste
RD	Remedial Design
RD/RA	Remedial Design / Remedial Action
REL	Recommended Exposure Limit
RHWRE	Regional Hazardous Waste Remediation Engineer - head of the hazardous waste remediation unit in each of the DEC's Regional offices
RI	Remedial Investigation
RI/FS	Remedial Investigation / Feasibility Study
ROD	Record of Decision
RP	Responsible Party
RQ	Reportable Quantity
RSE	Regional Spills Engineer - head of petroleum spill response and prevention unit in each of the DEC's Regional offices
RTK	Community Right To Know - Executive Order No. 33 (NYS)
S	Top of Page
SAC	State Assistance Contract
SARA	Superfund Amendments Reauthorization Act of 1986

	(Federal)
SCBA	Self-Contained Breathing Apparatus
SCGs	Standards, Criteria and Guidance - the State version of ARARs
SEMO	State Emergency Management Office
SEQRA	State Environmental Quality Review Act
SERC	State Emergency Response Commission
SFY	State Fiscal Year
SGC	Short-term Guideline Concentration (Air Toxics)
SI	Site Investigation - in NY's Brownfield Program (Also USEPA Site Investigation)
SI/RAR	Site Investigation/Remedial Alternatives Report
SIR	Statistical Inventory Reconciliation
SISD	Spill Information System Database
SOP	Standard Operating Procedure
SPDES	State Pollution Discharge and Elimination System - the State regulatory system for controlling pollution discharges to waterways and groundwater
SPOTS	Spill Prevention Operations Technology Series (DEC guidance documents)
SPR	Spill Prevention Report
SRF	Spill Response Form
SRF	State Revolving Fund
SSF	State SuperFund
STARS	Spills Technology And Remediation Series - guidance from DEC for petroleum and chemical spill remediation
STIP	Stipulation Agreement
STP	Sewage Treatment Plant
SVE	Soil Vapor Extraction or Soil Vacuum Extraction
SVOC	Semi-Volatile Organic Compound

SW	Surface Water
SWMU	Solid Waste Management Unit
T	Top of Page
TAB	Technical Assistance Bulletin
TAG	Technical Assistance Grant
TAGM	Technical and Administrative Guidance Memorandum - guidance issued by DER for implementation of the hazardous waste site remedial program
TAL	Target Analyte List
TCA	Trichloroethane
TCDD	Tetrachlorodibenzo para-dioxin - one of many chlorinated dioxin compounds
TCDF	Tetrachlorodibenzofuran - one of many chlorinated furan compounds
TCE	Trichloroethylene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure - a leaching test used to identify hazardous waste and evaluate petroleum contaminated soils.
THO	Total Halogenated Organic compounds
Title 3	Article 52, Title 3 of the ECL authorizes EQBA grants to municipalities for hazardous waste site cleanup
TLV	Threshold Limit Value - an air contaminant level
TOCs	Total Organic Compounds
TOGS	Technical Operating Guidance Series - from DEC's Division of Water
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substances Control Act (U.S.)
TSDF	Treatment, Storage or Disposal Facility
TWA	Time Weighted Average - an air contaminant level
U	Top of Page
UEL	Upper Explosive Limit (see LEL)

ug/kg	microgram/kilogram - a unit of concentration in solids (equivalent to ppb)
ug/L	microgram/Liter - a unit of concentration in liquids (equivalent to ppb)
UL	Underwriters Laboratories
USCG	United States Coast Guard
USGS	United States Geological Survey
USM	Universal Sorbent Materials
UST	Underground Storage Tank
UV	Ultraviolet
V	
VCP	New York State's Voluntary Cleanup Program
VOA	Volatile Organic Analysis or Volatile Organic Analyte
VOC	Volatile Organic Compound
W	
WBE	Woman's Business Enterprise
WWTP	Waste Water Treatment Plant
X	
XRF	X-Ray Fluorescence - an analytical technique for inorganic compounds
Z	
ZHE	Zero Headspace Extractor

Back to top of page



Region 8 Citizen's Glossary of Environmental Terms A through F

More information from this division:

Region 8
Region 8 Citizen Participation Page

This glossary lists common terms related to New York State Department of Environmental Conservation's voluntary cleanup, brownfield, and inactive hazardous waste disposal site programs. A more complete description is presented on the glossary main page

A B C D E F G-P Q-Z

A	Description
Acid	Chemicals that have a high concentration of hydrogen ions. Acids have a **pH** of less than 7 on a scale of 0 to 14. Strong acids, closer to 0 on the scale are corrosive, and weak acids, with a pH closer to 7, are not. An acid is the opposite of a **base**.
Activated carbon	A highly absorbent form of carbon, formed primarily from coal and lignite, that absorbs organic compounds. "Activated carbon treatment systems" are used to remove odors and toxic substances from liquid or gaseous emissions.
Acute effects	Health effects that have a rapid onset, a short course, and pronounced symptoms and termination. A reaction that occurs shortly after exposure to a chemical.
Acute exposure	A single, short contact with a chemical. It may last a few seconds or a few hours, but no longer than a day.

Region 8 Citizen's Glossary of Environmental Terms A through F

More information from this division:

Region 8
Region 8 Citizen Participation Page

This glossary lists common terms related to New York State Department of Environmental Conservation's voluntary cleanup, brownfield, and inactive hazardous waste disposal site programs. A more complete description is presented on the glossary main page

A B C D E F G-P Q-Z

A	Description
Acid	Chemicals that have a high concentration of hydrogen ions. Acids have a **pH** of less than 7 on a scale of 0 to 14. Strong acids, closer to 0 on the scale are corrosive, and weak acids, with a pH closer to 7, are not. An acid is the opposite of a **base**.
Activated carbon	A highly absorbent form of carbon, formed primarily from coal and lignite, that absorbs organic compounds. "Activated carbon treatment systems" are used to remove odors and toxic substances from liquid or gaseous emissions.
Acute effects	Health effects that have a rapid onset, a short course, and pronounced symptoms and termination. A reaction that occurs shortly after exposure to a chemical.
Acute exposure	A single, short contact with a chemical. It may last a few seconds or a few hours, but no longer than a day.

Administrative order on consent	See **Consent order**
Administrative record	Part of a site's **Record of Decision** (ROD) which lists and defines documents used in the development of DEC's decision about selection of a **remedial action**.
Adsorb/ Adsorption	Molecules of gas, liquid, or dissolved solids that adhere or "stick" to the surfaces they come in contact with. Some chemicals adsorb strongly to soil particles. This differs from *absorb*: "to take up or make part of the existing whole," like a sponge absorbs (sucks up) water.
Air sparging	Injecting air or oxygen into an **aquifer** to strip or flush **volatile** contaminants as air bubbles up through the ground water. The air is captured by a vapor extraction system. (See **soil vapor extraction system**).
Air stripping	A treatment system that removes or "strips" **volatile organic compounds** from contaminated groundwater or surface water by forcing an airstream through the water and causing the compounds to evaporate.
Ambient	The surrounding environment. Ambient usually refers to the surrounding outdoor air, water, or land.
Anaerobic	Absence of oxygen. Some organisms, such as certain soil bacteria, thrive under anaerobic conditions in soil.
Analyte	A chemical being tested for in a laboratory test.
Arsenic	An element used in wood preservatives and pesticides.
Applicable or Relevant and Appropriate Requirements (ARARs)	Any state or federal statute that pertains to protection of human life and the environment in addressing specific conditions or use of a particular cleanup technology at a **Superfund** site.

Aquifer	An underground water-bearing formation of soil or rock commonly used for drinking water.
Aquifer recharge	See **Recharge**
Aquitard	Geological formation that may contain **groundwater** but significant quantities of water will not move through it under normal conditions. May function as a **confining layer**.
Attenuation	See **Natural attenuation**
Availability session	A scheduled gathering of program staff and members of the public in a casual setting, with or without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.
B	**Back to top of page**
Background, Background level	The **concentration** of a substance in air, water, or soil that occurs naturally or is the result of human activities not related to a hazardous waste site; conditions in the area near, but not affected by, a hazardous waste site. "Background samples" are often taken to compare an area's natural or pre-existing conditions to conditions at a hazardous waste site.
Barrier protection layer	A layer of soil covering a **geomembrane** designed to protect the geomembrane from wear and tear caused by the weather, animals, etc.
Base	Bases are chemicals that have a large concentration of hydroxyl (one hydrogen plus one oxygen atom) ions. A basic compound has a **pH** of more than 7 on a scale of 0 to 14. Strong bases, pH closer to 14, are corrosive. Weak bases, with pH closer to 7, are not. An **acid** can neutralize the effects of a base.
Bedrock	The continuous solid rock of the continental crust. Bedrock can be found anywhere from the surface to hundreds of

	feet below ground. Bedrock can be solid or it can contain numerous cracks (fractures). Groundwater and chemicals can move through fractured bedrock.
Benthic	bottom-dwelling; usually refers to aquatic life living at the bottom of a river, stream or lake.
Bentonite	A very fine clay, expansible when moist, commonly used to provide a tight seal around a monitoring well. Also used in **slurry walls**.
Bioaccumulation	The build-up of toxic materials in body tissues of fish and animals.
Bioavailability	The extent to which a substance can readily be absorbed by an organism or is ready to interact in an organism's metabolism.
Bioremediation	The **degradation** (breakdown) or stabilization of contaminants in the environment by microorganisms. There are many **remedial** techniques that use microorganisms, such as bacteria, to break down contaminants. Any of these techniques may be called bioremediation.
Biota	All the living organisms in a given area.
Borehole	Hole made with drilling equipment.
Boring	See **Soil boring**
Brownfield	Abandoned, idled, or under-used properties where expansion or redevelopment is complicated by real or perceived environmental contamination. Brownfield sites can pose environmental, legal, and financial burdens on a community and its taxpayers. New York State provides funds through the **1996 Clean Water/Clean Air Bond Act** to help municipalities that own brownfields but are not responsible for the contamination to investigate and clean up these sites. Brownfields cleaned up using Bond Act funds are also called

	Environmental Restoration Projects. The U.S. Environmental Protection Agency has a similar brownfield initiative.
C	**Back to top of page**
Cap	See **Landfill cap/ Landfill cover system**
Carbon adsorption	A process by which contaminants are removed from groundwater or surface water when the water is forced through tanks containing **activated carbon**, a material that attracts the contaminants.
Carbon tetrachloride	A colorless, nonflammable liquid with a characteristic odor used as a solvent and in the synthesis of fluorocarbons.
Carcinogen	A cancer-producing substance.
Catch basin or catch-basin	1) A structure used to catch sediments for contaminant retention, often on a stream. 2) A cistern or vault at the point where a pipe from inside a factory or a street gutter discharges into a sewer, to catch bulky matters which would not pass readily through the sewer.
Carcinogenic	Capable of producing or inciting cancer.
CERCLA	See **Comprehensive Environmental Response, Compensation, and Liability Act**
Chlorinated hydrocarbons	Chemicals containing only chlorine, carbon, and hydrogen. These include some pesticides, such as DDT and heptachlor, and solvents such as **trichloroethene** and **chloroform**.
Chlorinated organics	See **Chlorinated Solvents**
Chlorinated solvents	A group of organic (carbon-containing) solvents which contain chlorine as a part of their molecular structure. Chlorinated solvents are widely used for metal parts cleaning, dry cleaning, chemical processing, and photographic film making. Common chlorinated solvents include

	chloroform, methylene chloride, carbon tetrachloride, trichloroethene, tetrachloroethene, and 1,1,1-trichloroethane.
Chloroform	A clear, colorless liquid with a characteristic odor. Chloroform was one of the earliest general anesthetics but this use was abandoned due to toxic effects. Now it is widely used as a solvent in the production of lacquer, pharmaceuticals, fluorocarbons, and plastics.
Chronic effects	A long-term or repeated reaction that occurs after an exposure to a chemical. Chronic effects are the opposite of **acute effects**.
Citizen participation (CP)	A process to inform and involve citizens in the decision-making process during identification, assessment and **remediation** of **inactive hazardous waste sites**. This process helps to assure that sound decisions are made from environmental, human health, economic, social and political perspectives.
Citizen participation plan	A document that describes the site-specific citizen participation activities that will take place to complement the investigation and clean-up activities at a hazardous waste site. A plan may be updated or altered as public interest or the technical aspects of the program change.
Citizen participation record	A series of documents prepared at a major remedial stage which describes the citizen participation activities required at that stage. A CP record also directs a scoping process to determine if additional citizen participation activities are appropriate and feasible.
Citizen participation specialist	A DEC staff member within the Division of Public Affairs and Education who provides guidance, evaluation and assistance to help the project manager carry out the site-specific citizen participation program.
Classification	See **Site classification**

1996 Clean Water/ Clean Air Bond Act	Provides $1.75 billion for priority environmental programs to ensure further protection of New York's air, water and natural resources, $200 million of which funds the Environmental Restoration Program, also known as the **Brownfield** Program, to provide financial assistance to municipalities for the investigation and /or cleanup of municipally-owned potentially contaminated properties. The municipality may then return these properties to productive use or can market them for redevelopment.
Cleanup	Action taken to respond to a hazardous material release or threat of a release that could affect humans and/or the environment. Also called **remedial action**, **removal action**, response action, or corrective action.
Combustion	Burning.
Comment period	A time period for the public to review and comment on various documents and **Division of Environmental Remediation** (DER) actions. For example, a 30 day comment period is provided when DER issues a **Proposed Remedial Action Plan** (PRAP).
Community relations	The Environmental Protection Agency's program to inform and involve the public in the **Superfund** process and respond to community concerns.
Community relations plan (CRP)	The formal plan for Environmental Protection Agency community relations activities at a **Superfund** site. The CRP is designed to ensure citizen opportunities for public involvement and allow citizens the opportunity to learn about a site.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)	A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act. CERCLA created a special tax that goes into a trust fund, commonly known as **Superfund**, to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under

	the pro-gram, EPA can either pay for site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work; or take legal action to force parties responsible for site contamination to clean up the site or reimburse the government for the cost of cleanup.
Cone of depression/ Cone of influence	A depression in the **water table** that develops around a pumped well.
Concentration	The amount of one substance in another substance. For example, a concentration of 10 milligrams per liter means there are 10 milligrams of a substance in 1 liter of another substance.
Conceptual design	The general outline of planned actions that will be taken to address a hazardous waste site, such as building a **landfill cover system**. The conceptual design is incorporated into detailed design documents during **Remedial Design**.
Confining layer (confining bed)	A layer or bed of **impermeable** or distinctly less permeable material lying below or above one or more **aquifers**. When the confining layer lies between two aquifers, it keeps water from the upper aquifer separated, or confined, from water in the lower aquifer.
Consent order	A legal and enforceable negotiated agreement between DEC and responsible parties where **responsible parties** agree to undertake investigation and cleanup or pay for the costs of investigation and cleanup work at a site. Also called an "Order on Consent."
Construction and demolition (C&D) debris/ waste	Waste building materials, dredging materials, tree stumps, and rubble resulting from construction, remodeling, repair, and demolition of homes, commercial buildings and other structures and pavements.

Contact list	Names, addresses and/or telephone numbers of individuals, groups, organizations and media interested and/or affected by a particular hazardous waste site. The DEC mails site-related information to the contact list, also called a mailing list.
Contaminant	Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.
Contamination	Microorganisms, chemicals, toxic substances, wastes, or wastewater introduced into water, air, or soil in a concentration that makes the **medium** unfit for its next intended use. Objects such as building surfaces can also contain contamination.
Contaminant mass	The volume and area of contaminants in a polluted material, such as soil or groundwater. The goal of waste cleanup is to reduce the contaminant mass (e.g., reduce the amount and area of contaminants in soil).
Contaminant plume	see **Plume**
Contract Laboratory Program (CLP)	The Environmental Protection Agency's program that approves laboratories that provide chemical testing services of known quality using a wide range of standard methods and maintaining consistent quality control.
Corrosive	Having the power to degrade or wear away a material by chemical action.
Cost recovery	A legal process where **potentially responsible parties** can be required to pay back the federal or state government for money spent on cleanup actions. Cost recovery actions usually begin after the government has completed a site cleanup.
Cover material	(1) Soil used to cover compacted solid waste in a sanitary landfill. (2) See **Landfill cap/landfill cover system**.

Cover system	See **Landfill cap/landfill cover system**
D	**Back to top of page**
Deed notification	A notice placed on a property deed to alert future buyers about contamination on a property.
Deed restriction	A legal restriction placed on a property deed to restrict future uses of a contaminated property. For example, a deed restriction may prohibit future housing development on a contaminated industrial site, or prohibit use of contaminated groundwater on a piece of property.
Degradation products (Daughter products)	**Chlorinated solvents**, when released in the environment, will naturally degrade by microbial and physical processes in soil and/or groundwater into similar compounds that have fewer chlorine atoms. These new compounds are known as degradation products. For instance, **tetrachloroethylene**, which has 4 chlorine atoms, degrades to **trichloroethylene**, which has only 3 chloride atoms.
Degreaser	Chemical used to remove grease, usually from metal or plastic.
Delist/delisted/ delisting	Many sites that have been cleaned up are delisted, meaning they are removed from the **State's Registry of Inactive Hazardous Waste Disposal Sites**. Sites that are delisted can fall into one of three categories: • **D1**: No consequential amount of hazardous waste was confirmed at the site. • **D1**: No consequential amount of hazardous waste was confirmed at the site. **D2**: **Remedial actions** have been completed at the site and no further action is required. • **D1**: No consequential amount of hazardous waste was confirmed at the site. **D3**: Site was combined with

	another site on the **Registry of Inactive Hazardous Waste Disposal Sites**.
Dense Non-Aqueous Phase Liquid (DNAPL)	Liquids denser than water that represent a special class of soil and groundwater contaminants with unique behavior and problems. Since they are denser than water, DNAPLs can sink deeper into the ground and can act as a continuing source of groundwater contamination, as small amounts of the material can dissolve in groundwater.
Density	The mass of a substance per unit of volume. Substances with a density greater than 1.0 are denser than water; substances with a density less than 1.0 are lighter than water.
Dermal	By or through the skin. "Dermal contact" refers to a substance coming in contact with skin.
Desorption	The opposite of **adsorption** or absorption; molecules detach from a surface (such as soil particles).
Detection limit	The lowest concentration of a chemical that can be reliably measured by a testing method.
Dewater	(1) Remove a portion of the water in soil or sludge to dry the soil/ sludge so it can be treated or disposed of. (2) Remove or drain the water from a tank or trench.
1,1-Dichloroethane (1,1-DCA) and 1,2-Dichloroethane (1,2-DCA)	Chemicals with similar molecular structures used to produce a variety of consumer and industrial products, such as specialty chemicals and cleaning products. These chemicals are sometime found at hazardous waste sites as the **degradation products** of other chemicals, such as **trichloroethane**.
Dichloroethene (DCE) or 1,1-Dichloroethene	Chemicals with similar molecular structures used to make specialty chemicals and pharmaceuticals. These chemicals are sometimes found at

and 1,2-Dichloroethene	hazardous waste sites as the **degradation products** of **trichloroethene**.
Diffusion	Movement of a substance from an area of high concentration to an area of low concentration. Diffusion can also refer molecules of gas or vapor moving from a source, such as a bottle, to a receptor, such as a human nose.
Division of Environmental Enforcement	A unit within the DEC which works with the **Division of Environmental Remediation** to negotiate agreements with responsible parties for the investigation and remediation of hazardous waste sites. A negotiated agreement is contained in a **consent order**.
Division of Environmental Remediation	Formerly the Division of Hazardous Waste Remediation, a major unit within the DEC created to manage the hazardous waste site remedial program from site discovery through **Operation and Maintenance** activities. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.
Document Repository	Typically, a DEC regional office and/or a public building, such as a library, near a particular site, at which documents related to **remedial** and **citizen participation** activities at the site are available for public review. Environ-mental Management Councils (EMCs), Conservation Advisory Committees (CACs) and active local groups can also serve as document repositories.
Downgradient	The direction that groundwater flows; similar to "downstream" for surface water.
Drainage Swale	See **Swale**
Drawdown	The vertical drop in the height between the water level in a well prior to pumping, and the water level in the well during pumping.

Drum	A metal or plastic container, usually with a 55 gallon capacity.
Drywell	A hole dug to a depth above the **water table** so that its bottom and sides are typically dry except when receiving fluid discharged from an industrial process. Is often filled with gravel or is reinforced with concrete blocks to form a chamber.
Dual-Phase Vacuum Extraction System	A treatment system designed to remove both contaminated groundwater and **soil gas** from a common groundwater well or wells. By removing ground-water, the system lowers the groundwater level around the well, allowing a strong vacuum to be applied to remove contaminated soil gas. The contaminated water and air can then be removed or treated and released.
Duplicate Sample	A sample taken at the same location as another sample. Both samples are tested for chemicals. Taking a duplicate sample helps to ensure that testing procedures are precise: because the samples were taken in the same location, the samples should contain similar levels of chemicals.
E	**Back to top of page**
Effluent	Treated or untreated wastewater that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged to **surface waters**.
Enforcement	DEC's efforts, through legal action if necessary, to compel a responsible party to perform or pay for site remedial activities.
Engineered/ engineering controls	Method of managing environmental and health risks by placing a barrier between the contamination and the rest of the site, thus limiting exposure pathways.
Environmental Notice Bulletin	A weekly DEC publication used to announce a variety of DEC activities. The ENB announces proposals to **delist** or change the **site classification** of **hazardous waste sites**, as well as

	voluntary cleanup agreements.
Environmental Restoration Program/ Project	See **Brownfield**
1986 Environmental Quality Bond Act	An act passed in 1986 that gives New York State bonding authority of up to $1.2 billion to fund the State's share of the total cost of remediating hazardous waste sites in New York State.
Epidemiology	The study of diseases as they affect population, including the distribution of disease, the factors (e.g., age, sex, occupation) that influences this distribution; and the application of this study to control health problems.
EP Tox Test	See **Extraction Procedure**
Explanation of Significant Differences (ESD)	A document prepared by the **Division of Environmental Remediation** explaining changes to a cleanup plan called for in a **Record of Decision** and the reason for those changes.
Explosive limits	The amounts of **vapor** in air which form explosive mixtures. Explosive limits are expressed as "lower explosive limits" and "upper explosive limits;" these give the range of **vapor** concentrations in air that will explode if heat is added. Explosive limits are expressed as percent of vapor in air.
Exposure	Contact. No matter how dangerous a substance or activity, without exposure, it cannot harm you.
Exposure routes	A means by which a toxic substance can come into contact with or enter the body. The three major exposure routes are: inhalation (breathing), direct contact (touching), and ingestion (swallowing).
Ex-situ	Outside the original location. For example, contaminated that soil is dug up and removed before it is treated is being

	treated *ex-situ*. This is the opposite of **in-situ**.
Exceedance	Violation of the pollutant levels permitted by environmental protection standards.
Extraction procedure (EP Tox Test)	Determining toxicity by a procedure which simulates leaching; if a certain concentration of a toxic substance can be leached from a waste, that waste is considered hazardous, i.e., "EP Toxic."
Extraction well	A discharge well used to remove contaminated groundwater or air.
F	**Back to top of page**
Feasibility Study (FS)	A report examining the pros and cons of alternative methods to address contamination at a hazardous waste site. The feasibility study usually recommends a certain alternative. The FS is usually based on the results of a **remedial investigation**; together, they are commonly referred to as the RI/FS.
Federal Register	A weekly publication covering federal government activity including rule making, proposed plans, response to public comments, etc..
Fill	Man-made deposits of natural soils or rock products and waste materials.
Fish and wildlife impact analysis	Part of a **remedial investigation** that looks at the effects or potential effects of contamination on fish and wildlife.
Flammable	Catches on fire easily and burns rapidly.
Flash point	The lowest temperature at which the **vapor** of a substance will catch on fire, even momentarily, if heat is applied. Provides an indication of how **flammable** a substance is.

Next Glossary Pages: G-P Page and Q-Z Page

Back to the Citizen Participation Page

Back to top of page

Region 8 Citizen's Glossary of Environmental Terms G through P

More information from this division:

DEC Region 8
Region 8 Citizen Participation Page

This glossary lists common terms related to New York State Department of Environmental Conservation's voluntary cleanup, brownfield, and inactive hazardous waste disposal site programs. A more complete description is presented on the glossary main page.

A-F G H I L M N O P Q-Z

G	
Gas venting system	A system of pipes and vents installed in a **landfill** to prevent the build up of **landfill gases**, such as methane, that could potentially explode. Sometimes the gas vents have flares on them to burn the gas as it is released into the atmosphere. At some very large landfills, the gas is collected and used to generate electricity.
Geomembrane	A low **permeability** plastic sheet that is placed over a landfill to deter rain and snow from entering a landfill's waste. Geomembranes are often made from a plastic called HDPE (high density polyurethane). The geomembrane is covered with soil (**barrier protection layer**) and top soil to protect it.
Geophysical surveys	Techniques used to characterize the subsurface without having to dig up large areas. Examples include seismic refraction (commonly used to determine depth to bedrock), ground-penetrating radar (used

	to define sub-surface structures and buried objects), and **magnetometry** (used to detect buried iron objects).
Geoprobe™	A special machine used to make **soil borings** and to create temporary **groundwater monitoring wells**.
Gram(g)	The unit of mass in the metric system. An ounce is about 28 grams, and a pound is approximately 450 grams.
Granular activated carbon treatment	A filtering system often used in small water systems and individual homes to remove **organic compounds**. See **activated carbon**.
Groundwater	Water found beneath the earth's surface that fills pores between soil particles such as sand, clay, and gravel or that fills cracks in bedrock. Precipitation that does not evaporate or runoff to surface waters **percolates** downward through soil and becomes groundwater. Groundwater flows from areas of high elevation to low elevation at generally low velocities (usually ranging from 10-1000 feet/year) and eventually discharges into surface waters such as rivers, lakes, and wetlands. Groundwater often provides a source of drinking water via wells. The chemical composition of the groundwater reflects the soil or bedrock through which it passes; groundwater dissolves minerals in the soil and bedrock. If a source of contamination exists at or below the earth's surface, percolating rainfall or snowmelt can transport contaminants downward where they can migrate with the groundwater.
Groundwater collection/ extraction and treatment system	A system of wells fitted with pumps and piping used to pump out or extract contaminated groundwater from the subsurface. Properly designed and operated systems can effectively contain a groundwater contaminant **plume** and prevent further contaminant migration.
Groundwater table	See **Water Table**

H	Back to top of page
Half-life	(1) The time required for a pollutant to lose half its effect on the environment. (2) The time required for half of the atoms of a radioactive element to undergo decay. (3) The time required for the elimination of one half a total dose from the body.
Hammer mill	A high-speed machine that uses hammers and cutters to crush, grind, chip, or shred solid waste.
Hazardous ranking system (HRS)	A scoring system used to evaluate potential relative risks to public health and the environment from releases or threatened releases of hazardous materials. EPA and States use the HRS to calculate a site score (0 to 100) based on the actual or potential release of hazardous materials from a site through air, surface water, or groundwater. This score is the primary factor used to decide if a hazardous waste site should be placed on the **National Priorities List**.
Hazardous Substance	(1) Under the **Comprehensive Environmental Response, Compensation, and Liability Act**, a hazardous substance is any element, compound, mixture, solution, or substance that, when released to the environment, may present a substantial danger to the public health or welfare or to the environment, including, but not limited to, toxic and certain other pollutants under the Federal Water Pollution Control Act, **Resource Conservation and Recovery Act**, hazardous air pollutants regulated by parts of the Clean Air Act, and **Toxic Substance Control Act**. The term is much broader than the term **hazardous waste**. Sites that contain only hazardous substances are excluded from New York's **Superfund** program. (2) Any substance designated reportable by the EPA if a designated quantity of the substance is spilled in the waters of the United States or if it is otherwise emitted to the environment.

Hazardous Substance Site	A site that contains **hazardous substances** but does not contain **hazardous waste**. Therefore, it cannot receive funding or attention from the State's Superfund program.
Hazardous waste(s)	By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. To be considered hazardous waste, the waste must possess at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity) or appear on special EPA lists.
Hazardous waste site	A place where **hazardous wastes** have been dumped, buried or improperly stored. Sites range from a crest of land containing thousands of tons of chemical wastes to a few drums of solvents dumped in a vacant lot. See also **inactive hazardous waste disposal site**.
Health and safety plan	A plan included in investigation or **cleanup** work plans which outlines protective measures for site workers and the community during investigation or cleanup activities.
Health hazard	Anything which can have harmful effects on health. There can be both acute and chronic health hazards.
Health risk assessment	A process which estimates the likelihood that people who could be exposed to chemicals may have health effects. The four steps of a risk assessment are: (1) hazard identification (Can this substance damage health?), (2) dose-response assessment (What dose causes what effect?), (3) **exposure** assessment (How and how much do people contact it?), and (4) risk characterization (combining the other three steps to estimate **risk**).
Heavy metals	Metals with high atomic weights, such as mercury, chromium, cadmium, arsenic, and lead. They can damage living things at low concentrations and tend to accumulate in the food chain.

	(a measure of the amount of water available) of an **aquifer**.
Hydrogeology	The geology of **groundwater**, with particular emphasis on the chemistry and movement of water.
Hydrology	The study of the movement and properties of water on the earth's surface, underground and in the atmosphere.
I	**Back to top of page**
Impermeable	Unable to be penetrated, as by liquids. For example, an "impermeable membrane" can be a thin plastic sheet through which rainwater cannot move.
Inactive hazardous waste disposal site	A hazardous waste site where disposal of hazardous wastes has been confirmed and wastes are no longer being disposed of there ("inactive" site).
Incineration	Burning of certain types of solid, liquid, or gaseous materials under controlled conditions to destroy hazardous wastes.
Infiltration	The penetration of water through the ground surface into sub-surface soil or the penetration of water from the soil into sewer or other pipes through defective joints, connections, or manhole walls. (See: **percolation**.)
Influent	Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant. The opposite of **effluent**.
Ingestion	Swallowing. This is one way a person can be exposed to chemicals.
Inhalation	Breathing. This is one way a person can be exposed to chemicals.
Inorganic chemicals/ compounds	Chemicals that do not contain carbon. **Metals** are inorganic chemicals.
In-Situ	In the original place. In-situ treatment is carried out at a hazardous waste site without having to dig up and move the contaminated material. In-situ is the

	opposite of **ex-situ**.
Insoluble	Incapable of being dissolved in water or another liquid.
Institutional controls	A variety of methods used to control access to a contaminated site and/or exposure to contaminants at a site. Examples of institutional controls include fencing or **deed notifications/ restrictions.**
Interim remedial measure(s) (IRM)	Action(s) that can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined hazardous waste problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.
L	**Back to top of page**
Land Disposal Restrictions (LDR's)	Federal rules that require **hazardous wastes** to be treated before disposal on land to destroy or immobilize hazardous constituents that might migrate into soil and **groundwater.**
Landfill	Any place where wastes were disposed of by dumping waste and covering it. There are three main kinds of landfills: (1) Sanitary landfills are disposal sites for nonhazardous solid wastes at which the waste is spread in layers, compacted to the smallest practical volume, and covered with material at the end of each operating day. (2) Secure chemical landfills are disposal sites for hazardous waste. They are selected and designed to minimize the chance of release of hazardous substances into the environment. (3) Old landfills were built without modern day protections; these may contain hazardous wastes. Many of these landfills are being investigated and cleaned up under the State's remediation program.
Landfill cap/ landfill cover system	A layering of material over a landfill to deter rain and snowmelt from moving through the waste pile. A typical landfill cover will include a **geomembrane** or a

	layer of clay covered with a layer of low **permeability** soil, which in turn is covered by a layer of topsoil and seeded to encourage grass to grow. Landfill cover systems can also include gas vents to prevent gases such as **methane** from building up inside the landfill. The cover system is designed so rain and snowmelt is directed into a drainage ditch or **swale.**
Landfill gas	As organic wastes within a landfill break down, gases such as methane and hydrogen sulfide are produced. The production of these gases drops off over time.
Leachate	Surface or groundwater that is contaminated while moving through a landfill's wastes.
Leachate collection system	A system that gathers leachate and pumps it to the surface for treatment.
Light non-aqueous phase liquid (LNAPL)	Liquids lighter than water that represent a special class of soil and groundwater contaminants with unique behavior and problems. See also **NAPL.**
Liner	A relatively **impermeable** barrier designed to keep **leachate** inside a landfill. Liner materials include plastic and dense clay.
List / listing	When DEC adds a hazardous waste site to the **Registry of Inactive Hazardous Waste Disposal Sites**, this is called "listing" a site.
Liter	The unit of volume in the metric system. A liter is about the same as a quart.
Low Temperature Thermal Desorption	The process of heating soil anywhere between 200 and 1000°F in order to vaporize contaminants with low boiling points. The vaporized contaminants are collected and treated. The low temperatures requires less fuel than other treatment methods.
M	**Back to top of page**

Magnetometer/ magnetometer survey	A magnetometer is an instrument that can detect metal objects buried underground. When this instrument is used to look for buried drums or other metal objects at a hazardous waste site, this is called a magnetometer survey.
Maximum contaminant level	The maximum permissible level of a contaminant in water delivered to any user of a public water system. MCLs are enforceable standards.
Media/medium	Specific environments that can contain contaminants. Air, water, sediment and soil are media.
Metals	A number of chemical elements that share certain special characteristics. Many metals can be toxic in high doses and can **bioaccumulate** in the food chain. Metals sometimes found at **hazardous waste sites** include: arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc.
Methane	An odorless gas produced in newer landfills as organic material (previously living things or material derived from living things) breaks down. Methane production drops off as a landfill gets older.
Methylene chloride	A colorless nonflammable liquid, with a pleasant aromatic odor, used as a solvent, paint remover, and **degreaser**.
Micrograms per kilogram (ug/kg)	A way of expressing dose: micrograms (ug) of a substance per kilogram (kg) of body weight or soil.
Micrograms per liter (ug/l)	A unit of measure: the number of micrograms of one substance in a liter of liquid. One microgram per liter means one microgram of chemical per liter of water, and is essentially equivalent to one **part per billion** (ppb). Theoretically one ug/l of a substance equals one part per billion of the substance multiplied by its **density**.
Milligrams per kilogram (mg/kg)	A way of expressing dose: milligrams (mg) of a substance per kilogram (kg) of body weight or soil.

Milligrams per liter (mg/l)	A unit of measure: the number of milligrams of one substance in a liter of liquid. One milligram per liter means one milligram of chemical per liter of water, and is essentially equivalent to one **part per million** (ppm) at very low concentrations. Theoretically one mg/l of a substance equals one part per million of the substance multiplied by its **density**.
Monitored Natural Attenuation	**Natural attentuation** that is expected to achieve site cleanup objectives within a time frame that is reasonable compared to more active cleanup methods. The natural attenuation processes are carefully monitored. Monitored Natural Attenuation is used in combination with "source control" or removing the contamination source as far as practicable.
Monitoring well	(1) A well used to obtain water quality samples or measure groundwater levels. (2) A well drilled to collect groundwater samples for testing to determine the amounts, types, and distribution of contaminants in the groundwater beneath the site. The well enables samples of groundwater to be collected at a specific horizontal and vertical location for chemical analysis. Sometimes soil samples are also collected as the well is being drilled.
N	**Back to top of page**
National Priorities List (NPL)	The U.S. Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term **remedial** response using money from a special trust fund (**Superfund**).
Natural attenuation	Relying on natural (physical, chemical, or biological) processes to reduce mass, toxicity, mobility, volume or concentration of compounds in earth or **groundwater**. Under proper conditions, can be used for **perchloroethylene** (PCE), **trichloroethylene** (TCE), and **trichloroethane** (TCA) at a lower cost than conventional remediation

	technologies.
New York State Department of Health	Agency within the executive branch of New York State government which: determines potential risk from environmental exposure at hazardous waste sites; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are addressed.
New York State Department of Law	Agency within the executive branch of New York State government which takes the lead on hazardous waste site litigation. Litigation can involve negotiations and court action with responsible parties to clean up sites; natural resources damage claims, and recovery of remedial costs.
New York State Registry of Inactive Hazardous Waste Disposal Sites	See **Registry of Inactive Hazardous Waste Disposal Sites in New York State**
Non-aqueous phase liquids (NAPL)	Liquids, commonly a mixture of several different chemicals, that are either denser or less dense than water. **Dense NAPL** (DNAPL), such as chlorinated solvents, will sink if it enters groundwater; less dense, or **light NAPL** (LNAPL), such as gasoline, will float on the water table. NAPL in the subsurface can be a persistent source of groundwater contamination due to its low **solubility** and **viscosity**.
O	**Back to top of page**
Occupational exposure limits	Maximum allowable concentrations of toxic substances in workroom air for workers.
Odor threshold	The lowest concentrations of a substance's **vapor**, in air, that can be smelled. Odor thresholds are highly variable, depending on the individual who breathes the substance and the nature of the substance.
Operable unit	An administrative term used to identify a portion of a site that can be addressed by a distinct investigation and/or cleanup approach. For example, groundwater

	contamination at a site may be considered as one operable unit, and soil contamination at the same site may be dealt with as a second operable unit. An operable unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each operable unit.
Operation and maintenance (O&M)	The period following construction of a **remedy** during which elements of the remedy must be operated and maintained. For example, after a groundwater collection and treatment system is installed (the **remedial construction** phase), operation of the groundwater collection system and treatment of the water would be part of the "Operation and Maintenance" phase of the remedial program. Activities could also include site inspections, groundwater well monitoring and other sampling.
Order on Consent	See **Consent Order**
Organic	(1) In chemistry, any compound containing carbon. (2) Referring to or derived from living organisms.
Organic compounds	Chemicals that contain carbon.
Overburden	The rock and soil in the ground above **bedrock**.
Oxidizer	(1) A substance (compound) that will accept electrons from another compound, thus changing (oxidizing) the other compound. (2)A material which may cause combustible materials to ignite without the aid of an external ignition source (such as flame) or which, when mixed with combustible materials, increases the rate of burning of these materials.
P	**Back to top of page**
Part 360	New York State landfill regulations, including some regulations related to old landfills that contain hazardous waste.

Part 375	The portion of New York State regulations governing **inactive hazardous waste disposal sites**.
Particulates	Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions.
Parts per billion (ppb)	The concentration of a substance of air, water or soil. One ppb means that there is one part of a substance for every billion parts of the air, water or soil in which it is measured. One ppb is about one drop of dye in 18,000 gallons of water or about one second in 32 years. One ppb is 1,000 times less than one **part per million**.
Parts per million (ppm)	The concentration of a substance in air, water or soil. One ppm means that there is one part of a substance for every million parts of the water or soil in which it is measured. One ppm is about one drop of dye in 18 gallons of water, about one inch in 16 miles, or one penny in $10,000.
Parts per trillion (ppt)	The concentration of a substance in air, water or soil. One ppt means that there is one part of a substance for every trillion parts of the water or soil in which it is measured. One ppt is 1,000 times less than one **part per billion**.
PCBs (polychlorinated biphenyls)	A group of toxic, persistent chemicals used in transformers for insulating purposes, in gas pipeline systems as a lubricant, and in some florescent light ballasts. The sale of PCBs was banned by law in 1979, but many old transformers still contain them.
Perchloroethene	See **Tetrachloroethene**
Percolate/ percolation	The movement of water through a porous substance such as soil.
Permeable/ permeability	The rate at which liquids pass through soil or other materials in a specified direction. Water moves easily through a "high permeability" soil (such as gravel) and very slowly through a "low permeability" soil (such as clay).

Pesticide	Substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Some pesticides can accumulate in the food chain and/or contaminate the environment if misused.
pH	A measure of the acidity or alkalinity (how basic) of a liquid or solid material. It is related to the number of hydrogen ions in a substance.
Photo ionization detector (PID)	A hand-held instrument used to measure the overall level of **volatile organic compounds** in air.
Piezometer	An instrument used to measure the elevation of the **water table**, i.e. how far below the surface groundwater is located.
Plume	An area of chemicals moving away from its source in a feather-like (hence the name, plume) shape. A plume, for example, can be a column of smoke drifting away from a chimney. An area of dissolved chemicals moving with groundwater is called a "groundwater contaminant plume."
Polychlorinated biphenyls	See **PCBs**
Polycyclic aromatic hydrocarbons (PAHs)	A group of over 100 different chemicals that form during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot. Some PAHs are manufactured. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides. Most do not dissolve easily in water and stick tightly to soil particles.
Polynuclear aromatic hydrocarbons (PAHs)	See **polycyclic aromatic hydrocarbons**
Porosity	The percentage of the total volume of a

	given body of rock that is pore space. It is the portion of void (air) space in rock, soil, or sediment.
Potable	Drinkable.
Potentially responsible party (PRP)	Persons identified by the EPA under **CERCLA** or by New York State law as being responsible for the contamination at a hazardous waste site. By law, PRPs may be generators, present or former owners or operators of a site, or transporters of the hazardous substances.
PRAP	See **Proposed Remedial Action Plan**
Precipitation	(1) Rain or snow. (2) Removal of solids from liquid waste so that the hazardous solid portion can be disposed of safely.
Preliminary site assessment (PSA)	A PSA is the **Division of Environmental Remediation**'s first investigation of a site. A PSA is performed to determine if a site meets New York State's definition of an **inactive hazardous waste disposal site** by confirming the presence of hazardous waste and determining if the site poses a significant threat to public health or the environment.
Presumptive remedy	Cleanup technique(s) that can be applied to hazardous waste sites with common characteristics. For example, old municipal landfills built without a liner often have similar characteristics. EPA has developed a "presumptive remedy" for this type of site. Essentially, EPA said "Here's a site similar in all key ways to many other sites we've cleaned up. Wouldn't it make sense to use that cleanup approach here too?"
Project manager	A DEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist, or hydrogeologist) responsible for the **remedial program** at a hazardous waste site. The project manager works with the Division of Public Affairs and Education, fiscal and legal staff and the Department of Health to accomplish site-related goals and objectives.

Proposed Remedial Action Plan (PRAP)	A document outlining alternatives considered by the Division of Environmental Remediation for the **remediation** of a hazardous waste site and highlighting the alternative preferred by DEC. The PRAP is based on information developed during the site's **Remedial Investigation** and **Feasibility Study**. The PRAP is reviewed by the public and other state agencies.
Public hearing	A formal hearing at which the public has the opportunity to submit comments and testimony on proposed actions for the public record.
Public meeting	A scheduled gathering of DEC staff and the public to give and receive information, ask questions and discuss concerns.
Publicly owned treatment works (POTW)	A wastewater system, owned by a municipality, state, or tribe that is used for the collection, treatment, and/or disposal of sewage. Usually POTW refers specifically to the sewage treatment plant.
Pump and treat	A method used to collect and treat contaminated groundwater. Typically, groundwater is collected in a well or trench and pumped to a treatment system.

Next Glossary Page: Q-Z Page

Back to the Citizen Participation Page

Back to top of page

Region 8 Citizen's Glossary of Environmental Terms Q through Z

More information from this region:

DEC Region 8
Region 8 Citizen Participation

This glossary lists common terms related to New York State Department of Environmental Conservation's voluntary cleanup, brownfield, and inactive hazardous waste disposal site programs. A more complete description is presented on the glossary main page.

A-F G-P Q R S T U V W

Q

Quality assurance (QA)/ quality control (QC)
A system of procedures, checks, audits, and corrective actions to ensure that environmental sampling and testing are of the highest achievable quality.

R

Reactivity
The ability of a substances to undergo change, usually by combining with another substance or by breaking down. Certain conditions, such as heat and light, may cause a substance to become more reactive. Highly reactive substances may explode.

Real-time monitoring
During construction or investigation activities, continuous monitoring of air with equipment that gives immediate read-outs; that is, samples don't need to be sent to a laboratory to obtain results.

Recharge
The replenishment of **groundwater** by infiltration of rain and snow through the soil.

Reclassification
A process by which the Division of Environmental

Remediation redefines the threat posed by a hazardous waste site to public health and the environment by developing and assessing site information and, based on findings and conclusions, assigning the site a new classification code (see **Site Classification.**

Record of Decision (ROD)

A document which provides the definitive record of the cleanup alternative that will be used to **remediate** a hazardous waste site. The ROD is based on the **Remedial Investigation / Feasibility Study** and public comment.

Registry of Inactive Hazardous Waste Disposal Sites in New York State

Often referred to as "the Registry," this is a compilation of all known and suspected hazardous waste sites (meeting certain criteria) in New York State. The Registry is compiled in a series of documents published every spring and can be purchased by the public. The document included a one page description and map of each site.

Remedial/ remediate/ remediation

Refers to any procedures or strategies used to address a hazardous waste site. For example, a *Remedial* Investigation determines what areas of a site need to be addressed (cleaned up or *remediated*), a **proposed remedial action plan** describes *remedial* actions (cleanup methods or corrective actions) that have been recommended for a specific site; *remediation* of a site could include removing contaminated soil.

Remedial action (RA)

Action taken to remove, destroy, reduce, or prevent the spread of contamination at a hazardous waste site.

Remedial alternatives report (RAR)

In New York State's **Brownfield** program, a RAR is the equivalent of a **feasibility study**.

Remedial construction (RC)

The physical development, assembly and implementation of the alternative selected to **remediate** a site. For example, remedial construction could include installing a groundwater collection and treatment system. Construction follows a **remedial design** stage.

Remedial design (RD)

The process following finalization of a **Record of Decision** in which plans and specifications are developed for the implementation of the alternative selected to remediate (clean up) a site.

Remedial Investigation (RI)

Studies designed to gather the data necessary to determine the type (nature) and extent (location) of contamination at a **hazardous waste site.** The RI is usually performed at the same time as a **Feasibility Study** in a process known as the

"RI/FS." This process is designed to:

- Establish criteria for cleaning up the site.
- Identify and screen cleanup alternatives for remedial action; and
- Analyze in detail the technology and costs of the alternatives.

Remedial program
DEC's efforts to investigate and clean up **inactive hazardous waste disposal sites**. A remedial program is designed to correct or "cure"(remedy) releases or potential releases of hazardous materials into the environment. DEC takes several steps as part of each site's remedial program: it investigates contamination (**Remedial Investigation**), analyzes different methods to address threats posed by the site (**Feasibility Study**), proposes a cleanup plan (**Proposed Remedial Action Plan**), selects a final plan (**Record of Decision**), and designs and implements the plan (**Remedial Design** and**Remedial Construction**).

Remediation
See remedial

Remedy
Actions taken to prevent or mitigate the release of hazardous materials into the environment at **hazardous waste sites** and **brownfield** sites. The word "remedy" is used in the sense of a "cure" or "corrective action."

Removal action
Often less burdensome and extensive than **remedial actions**, a removal action is intended to be a quick, temporary response to a release or the threat of release of a hazardous material at a hazardous waste site. A removal action could involve removing drums of hazardous material, contaminated soil or contaminated sediment and taking these items to a proper disposal facility.

Residual / residue
The quantity of a substance, its degradation products, and/or its metabolites remaining on or in the soil or groundwater. "Residual contamination" usually refers to low levels of chemicals that may be left in soil, bedrock or groundwater after cleanup of hazardous wastes.

Resource Conservation and Recovery Act (RCRA)
Federal law governing the treatment, storage, handling, disposal, and overall management of solid and hazardous wastes.

Responsible parties
See **Potentially responsible parties**

Responsiveness summary
A formal or informal written summary and response by the DEC to public questions and comments. A responsiveness

summary is prepared following a public meeting about a **Proposed Remedial Action Plan** and may also be prepared after other public meetings. The responsiveness summary may list and respond to each question, or summarize and respond to questions in categories.

Reverse osmosis
A type of pressurized filtration system in which water is forced through a semipermeable membrane that allows the passage of water but restricts many contaminants.

Riprap
Large fragments of broken rock, thrown together irregularly or fitted together (as on the down-stream face of a dam). Its purpose is to prevent erosion by waves or currents and thereby preserve a surface, slope, or underlying structure. It is used for irrigation channels, river-improvement works, spillways at dams, and sea walls for shore protection.

Risk
The chance of an injury, illness, or death caused by exposure to a hazard.

Risk assessment
The qualitative and quantitative evaluation performed in an effort to define the risk posed to human health and/or the environment by the presence or potential presence and/or use of specific pollutants.

ROD
See **Record of Decision**

Back to top of page

S

Sampling
Small amounts of air, water, or soil are obtained and tested to determine the levels of different hazardous chemicals contained in them.

Sanitary landfill
See **Landfill**

Saturated zone
A subsurface area in which all pores and cracks in rock and/or soil are filled with water.

Scrubber
A device for removing unwanted gases or particles from an air stream by spraying the air with liquid (usually water) or forcing air through a series of baths. Scrubbers are often put on smoke stacks.

Sediment
Soil, sand, and minerals washed by rain from land into water that accumulates on the bottom of ditches, streams, rivers and lakes.

Selected alternative
(1) The cleanup alternative selected by the state as the most feasible. (2) The cleanup alternative selected for a site on the **National Priorities List** based on technical feasibility, permanence, reliability, and cost.

Semi-volatile organic compounds (SVOCs)
Chemicals similar to **volatile organic compounds** but that do not evaporate as readily. **Polynucleated aromatic hydrocarbons** are semi-volatile compounds.

Site classification
DEC assigns **inactive hazardous waste disposal sites** classifications established by state law, as follows:

- **Class 1** - A site causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment - immediate action required.
- **Class 2** - A site posing a significant threat to the public health or environment - action required.
- **Class 2a** - A temporary classification for a site that has inadequate and/or insufficient data for inclusion in any of the other classes.
- **Class 3** - Site does not present a significant threat to the public health or the environment - action may be deferred.
- **Class 4** - A site which has been properly closed - requires continued management.
- **Class 5** - A site which has been properly closed, with no evidence of present or potential adverse impact - no further action required.

Site Investigation/ Remedial Alternatives Report (SI/RAR)
In New York's **Brownfield** program, this is the equivalent of a **Remedial Investigation / Feasibility Study** report. The site investigation is similar to a Remedial Investigation, and the Remedial Alternatives Report is similar to a Feasibility Study.

Sludge
A semi-solid residue from any of a number of industrial processes or air or water treatment processes. Sludge can be a hazardous waste.

Slurry
A watery mixture that does not contain a significant amount of dissolved materials.

Slurry Wall
An underground wall designed to stop groundwater flow; constructed by digging a trench and backfilling it with a **slurry** rich in bentonite clay.

Soil boring
A circular hole made in the ground by an auger or mechanical drill rig to collect soil samples deep in the

ground. Representative samples are collected for testing to see if the subsoil has been contaminated. Sometimes these borings are converted into groundwater monitoring wells.

Soil gas

Air in the spaces between soil particles. Contaminants can be trapped in this air.

Soil gas survey

A method for investigating underground distributions of **volatile organic compounds** (VOCs) by looking for their vapors in the shallow **soil gas**. The presence of VOCs in shallow soil gas indicates the VOCs may be in the unsaturated (dry) soil or in the groundwater below the probe. This survey is used to trace the outline of a contaminant **plume** and help determine the best location to install groundwater monitoring wells.

Soil Vapor Extraction System (SVE)

An **in-situ** remediation technique that applies a vacuum to a series of wells ("vapor extraction wells") and induces air flow through contaminated soil. As the air migrates through the soil, **volatile organic compounds** (VOCs) volatilize (evaporate) and move with the air to the extraction wells where they are removed from the subsurface. If the concentration of VOCs in the extracted air is high, the air maybe treated by a carbon adsorption system before being released to the atmosphere. In some cases, **dual phase vacuum extraction** is used to treat both groundwater and the overlying soil.

Solid waste

Non-liquid, non-soluble materials ranging from municipal garbage to industrial wastes that contain complex, and sometimes hazardous, substances. Solid wastes also include sewage sludge, agricultural refuse, demolition wastes, and mining residues.

Solubility

The amount of a substance that can be dissolved in water or (sometimes) another substance.

Solvent

A substance (usually a liquid) capable of dissolving one or more other substances. For example, paint remover is a paint solvent.

Sorb

To take up and hold by either **adsorption** or absorption.

Source area

An area from which groundwater contamination is believed to originate. For example, Company A spilled a 55 gallon drum of **trichloroethene** (TCE) onto the ground near a loading dock at their facility. The TCE spread through the soil and contaminated groundwater around the facility. Because the contamination originated in the loading dock area, this area

is the "source area." Over time, the highly concentrated TCE in the source area would continue to slowly spread through groundwater and soil, acting as a continuous "source" of groundwater contamination. Thus, the most effective way to slow down and prevent further spreading of contamination would be to address the source area.

SPDES permit (pronounced SPEEDIES)

See **State Pollution Discharge Elimination System**

Split samples

A soil sample from a hazardous waste site that is divided between the **potentially responsible parties (PRPs)** and the DEC or the Health Department. It functions as a system of checks and balances since both the PRPs and the DEC analyze their half of the sample. The results of the two analyses can then be compared.

Split-spoon Sample

A sample of **unconsolidated** material taken by driving a sampling device (split spoon) into the soil ahead of a drill bit in a **soil boring**. A split-spoon sampler is typically driven into the soil by repeatedly dropping a weight.

Standards, criteria and guidance values (SCGs)

Values that indicate acceptable or normal levels of various contaminants in the environment. These values are used to establish cleanup goals at hazardous waste sites. Depending on the chemical, the values are developed by the U.S. Environmental Protection Agency, DEC and/or the New York State Department of Health.

State assistance contract (SAC)

In DEC's **brownfield** program, the official agreement between a municipality and the state that outlines both party's responsibility for a brownfield investigation and/or cleanup.

State Pollution Discharge Elimination System (SPDES) permit

A permit issued by the DEC as part of the SPDES program, which is designed to maintain New York's waters with reasonable standards of purity. State law requires a SPDES permit before construction or use of an outlet or discharge pipe for wastewater discharging into **surface water** or **groundwater**, and for construction or operation of disposal systems such as sewage treatment plants.

Sump

A pit or tank that catches liquid runoff for drainage or disposal.

Superfund

Federal and state programs to investigate and clean up inactive hazardous waste disposal sites. The federal program gives the U.S. Environmental Protection Agency the funding and authority to investigate, rank and con-duct or supervise

cleanup of sites on the **National Priority List**. New York State's program gives DEC the same authority to deal with sites that do not qualify for the federal superfund list, but meet certain other qualifications.

Superfund Amendments and Reauthorization Act (SARA)
Modifications to **CERCLA** enacted in 1986. Sometimes referred to as the "Right to Know Law," it requires, among other things, that industry provide the government with information on the use and release of certain chemicals into the environment. This information is then made available to the public.

Surface water
All water naturally open to the atmosphere. Refers to water in rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, and so on.

Swale
A slight depression, sometimes swampy, in the midst of generally level land.

Back to top of page

T

Technical and Administrative Guidance Memorandum (TAGM)
An official internal **Division of Environmental Remediation** document that outlines divisional policies or recommended guidance for topics such as determining cleanup goals at **hazardous waste sites**.

Technical Assistance Grant Program (TAG Program)
A federal grant program that provides funds for qualified citizens' groups to hire independent technical advisors to help them understand and comment on technical decisions relating to federal **Superfund** cleanup actions.

Technical and Operational Guidance Series (TOGs)
DEC Division of Water's documents listing water quality standards and guidance values.

Test pit
A small excavation at a hazardous waste site. Investigators dig test pits to get an idea of subsurface conditions at hazardous waste sites.

Tetrachloroethene (Perchloroethene)
A clear, colorless, non-flammable liquid with a characteristic odor. It is a widely used solvent, especially as a dry cleaning agent and as a **degreaser**.

Threshold
A dose or exposure below which there is no measurable adverse effect.

Title 3 program/ project

Part of New York State's Superfund program whereby the State pays 75 percent of eligible costs for **remediation** of municipally owned hazardous waste sites and the municipality pays 25 percent.

Toxicity
The degree of danger posed by a substance to animal or plant life.

Toxicity Characteristic Leaching Procedure
Laboratory test used to determine the mobility of organic and inorganic contaminants present in liquid, solid, and multiphase wastes. If an extract from a representative sample is shown to contain any contaminant in an amount exceeding the levels allowed by regulations, the waste is banned for **land disposal** unless properly treated.

Toxic substances
A chemical or mixture that may present an unreasonable risk of injury to health or the environment.

Toxic Substances Control Act (TSCA) of 1976
A federal law that provides for testing of manufactured substances to determine toxic or otherwise harmful characteristics and regulation of the manufacture, distribution, use, and disposal of regulated substances.

Treatability studies
(1) Tests of potential cleanup technologies conducted in a laboratory. (2) Pilot-scale type tests conducted at hazardous wastes sites to determine if a treatment technology will work for that site's particular set of environmental conditions.

Treatment, storage, and disposal facility(TSDF)
A site where a hazardous substance is treated, stored or disposed of. TSDF facilities are regulated by EPA and states under the **Resource Conservation and Recovery Act**.

1,1,1-Trichloroethane (1,1,1 TCA)
Colorless, non-flammable, man-made liquid **solvent** used as a **degreaser**, a dry-cleaning agent, and a propellant.

Trichloroethene or Trichloroethylene (TCE)
A colorless, man-made liquid used primarily as a solvent for removing grease from metal. It has a variety of other uses such as a dry cleaning solvent and in the production of other chemicals. It generally gets into drinking water by improper waste disposal.

Back to top of page

U

Unconfined aquifer
An **aquifer** in which water is not contained by an **impermeable** layer of rock or soil. The water level in the aquifer may rise or fall according to the volume of water

stored, which varies according to seasonal cycles of natural recharge.

Unsaturated zone
The area of soil and rock between the land surface and the **water table**. The spaces between soil particles (pore spaces) in the unsaturated zone contain mostly air, but water occurs there as soil moisture.

Back to top of page

V

Vadose zone
The underground zone between the land surface and the water table; essentially the **unsaturated zone**.

Vapor
The gas given off by a solid or liquid substance at ordinary temperatures.

Vinyl chloride
A colorless gas used in the manufacture of polyvinyl chloride and other resins, and as a chemical intermediate and as an industrial solvent. Vinyl chloride is a **carcinogen**.

Viscosity
The property of a fluid describing its resistance to flow.

Volatile
Description of any substance that evaporates easily.

Volatile organic compounds (VOCs)
Carbon-containing chemicals which readily evaporate (cleaning solvents, gasoline, etc.). Many common industrial chemicals are VOCs, including **trichloroethene**, **1,1,1-trichloroethane**, and **tetrachloroethene**.

Voluntary cleanup agreement
A legal document signed by DEC and another party (volunteer) for investigation and/or cleanup of a contaminated site. In return for cleaning up the site, the volunteer receives a limited liability release for past environmental contamination of the site.

Voluntary cleanup program
A program designed to promote voluntary cleanup of contaminated sites including **inactive hazardous waste sites**, **hazardous substance sites**, petroleum contaminated sites and solid waste disposal sites, whereby the volunteer enters into a **Voluntary Cleanup Agreement** with the DEC.

Back to top of page

W

Waste

(1) Unwanted materials left over from a manufacturing process. (2) Refuse from places of human or animal habitation.

Water-bearing zone

The area underground in which pores and cracks in rock and/or soil are normally filled with water. Therefore, if a well is drilled into this area, water can be drawn out on a regular basis.

Water table

The level of groundwater; the boundary between the **unsaturated zone** and the **saturated zone**.The water-table generally reflects surface topography and varies with changes in land surface elevations.

Weir

(1) A wall or plate in a open channel to measure the flow of water. (2) A wall or obstruction used to control flow from settling tanks, clarifiers, or a drainage system to ensure a uniform flow rate.

Wetlands

An area that is regularly saturated by surface water or groundwater. Examples of wetlands include swamps, bogs, fens, marshes, and estuaries.

Back to the Citizen Participation Page

Back to top of page

APPENDIX B

FACT SHEETS ABOUT THE GM-SAGINAW DIVISION BUFFALO FACILITY SITE ISSUED SINCE THE START OF THE REMEDIAL INVESTIGATION

APPENDIX B

NO FACT SHEETS HAVE BEEN ISSUED FOR THE PROJECT SITE TO DATE
JANUARY 19, 2007

APPENDIX C

NYSDEC FACT SHEETS EXPLAINING THE INVESTIGATION AND CLEANUP STAGES OF THE HAZARDOUS WASTE SITE PROGRAM

APPENDIX C

NYSDEC FACT SHEETS EXPLAINING THE INVESTIGATION AND CLEANUP STAGES OF THE HAZARDOUS WASTE SITE PROGRAM

Fact Sheet:
Preliminary Site Assessment (PSA)

More information from this division:

Division of Environmental Remediation
More Remediation Fact Sheets

The Department of Environmental Conservation (DEC), along with the Departments of Health (DOH) and Law (DOL), is responsible for ensuring the cleanup of inactive hazardous waste disposal sites across the state. Under New York State's Inactive Hazardous Waste Disposal Site Remedial Program, the process begins with the discovery of a potential hazardous waste site and follows a path of thorough investigation, remedy selection, design, construction and monitoring. This fact sheet highlights one stage in the comprehensive process, the **Preliminary Site Assessment (PSA)**.

Preliminary Site Assessment

DEC carries out a PSA to determine whether a site is a hazardous waste site as defined by state law.

A Preliminary Site Assessment (PSA) is DEC's first investigation of a site where hazardous waste has or may have been disposed of illegally or improperly. The goal of the PSA is to determine whether a site meets the state's definition of a hazardous waste site by confirming or denying the presence of hazardous waste and determining whether or not the site poses a significant threat to public health or the environment. The PSA is performed by DEC or the potentially responsible party under DEC's oversight.

The PSA is a three-step investigation to determine if the site should be classified for remediation or delisted.

The PSA has three steps:

1. **Records Search:** This includes a thorough background review and record check into the past uses and waste

disposal activities at the site.

2. **Sampling/Surveys:** This involves sampling of exposed wastes, drums, surrounding soil and surface water. Additionally geophysical and soil gas surveys may be performed.

3. **Groundwater Monitoring:** This involves installing monitoring wells and analyzing water samples to check for subsurface contamination.

DEC evaluates PSA information to classify or delist a site.

Each PSA step ends with a decision point that can lead to one of two outcomes.

If the presence of hazardous waste and the degree of health or environmental threat can be documented, a site is *classified* to:

- Class 1 (imminent danger)
- Class 2 (significant threat)
- Class 3 (no significant threat)

If hazardous waste cannot be documented, a site is *delisted*.

Built-in decision points help move sites through the remedial process.

The decision points allow DEC to classify or delist the site as soon as enough information exists to support or refute the state's criteria for defining a hazardous waste site. They provide a mechanism to move sites into remediation at the earliest opportunity. If DEC does not have enough information to make the decision to classify or delist, the PSA continues to the next step.

Complex sites may require all three PSA steps.

At complex sites where hazardous waste is difficult to confirm or where significant threat is difficult to determine, all three PSA steps may be required before DEC makes a decision to classify or delist.

The PSA concludes with a decision to classify or delist a site.

DEC reviews all investigative documentation and makes a decision supported by input from local government agencies, the

Department of Health (DOH), DEC regional offices and the public. The PSA ends when a site is classified or delisted.

The NYS Department of Health (DOH) plays an important role in the investigation of hazardous waste sites.

DOH participates with DEC in the PSA process. Through its own early site investigation and health assessment, DOH identifies potential impacts on public health. DEC incorporates DOH information into the PSA to ensure that public health concerns are fully investigated. DOH also helps DEC identify priority sites, reviews work plans and reports and contributes to the decisions to classify or delist a site.

DEC prioritizes sites for further investigation and remediation.

Once DEC decides a site needs remediation based on the PSA findings, the site is ranked for further remedial investigation using the state's Priority Ranking System. DEC uses this system to first focus remedial and enforcement resources on sites with the most serious problems.

Further study and cleanup may follow a PSA.

Sites that become Class 1 or 2 move to the next stage of the remedial process - the Remedial Investigation/Feasibility Study (RI/FS). During a RI/FS, the full nature and extent of contamination is defined. Sites may also be referred for Interim Remedial Measures (early cleanup actions that may not require a full-scale investigation and design). Delisted sites are removed from the registry. Some sites are delisted because they do not fit the definition of "hazardous waste disposal site" yet they contain other waste materials. These sites may be referred to other DEC programs or the Attorney General for action (e.g., closing construction and demolition debris sites or municipal landfills).

DEC can nominate a site for federal cleanup based on PSA findings.

By evaluating information collected during the PSA in relation to federal requirements, the DEC can decide if a site should be nominated for the US Environmental Protection Agency's National Priorities List (NPL). NPL site remediations may be paid for by the federal Superfund.

Preliminary Site Assessment Steps/Outcomes

Records Search: a background review to document previous disposal practices and activities. Information that describes how

the waste was handled, stored, transported and disposed of comes from a wide variety of sources including: industry disposal records, site inspections, local or county investigations, interviews with local haulers, nearby residents and others who may have witnessed activities at a site.

Decision Point *- delist or classify and stop the PSA, or continue to the next step.*

Sampling/Surveys: conduct surficial environmental sampling (surface water, soil, waste piles, drums, etc.) and geophysical/soil gas surveys. Samples are sent to laboratories for analyses.

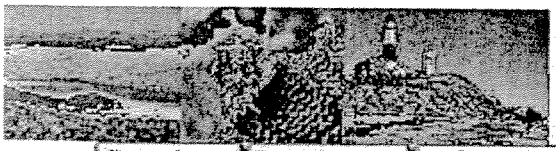
Decision Point *- delist or classify and stop the PSA or continue to the next step.*

Groundwater Monitoring: install and sample monitoring wells to determine if groundwater is contaminated; may conduct additional surficial sampling.

Decision Point *- delist or classify.*

For more information e-mail the Division of Environmental Remediation.

Back to top of page



Fact Sheet: Remedial Investigation/Feasibility Study

More information from this division:

Division of Environmental Remediation
More Remediation Fact Sheets

The Department of Environmental Conservation (DEC), along with the Departments of Health (DOH) and Law (DOL), is responsible for ensuring the cleanup of inactive hazardous waste disposal sites across the state. Under New York State's Inactive Hazardous Waste Disposal Site Remedial Program, the process begins with the discovery of a potential hazardous waste site and follows a path of thorough investigation, remedy selection, design, construction and monitoring. This fact sheet highlights one stage in the comprehensive process, the **Remedial Investigation/Feasibility Study (RI/FS)**.

Remedial Investigation/Feasibility Study (RI/FS)

RI/FS begins when hazardous waste contamination is confirmed.

The RI/FS follows preliminary site investigations by DEC and DOH that verify the presence of hazardous wastes that pose a significant threat to public health and the environment.

DEC and DOH gather detailed site information to work toward an effective remedial action.

DEC's Division of Environmental Remediation or the responsible party under an enforceable consent order carries out a Remedial Investigation (RI) to determine the nature and extent of contamination. DEC, along with DOH, uses the RI information to then perform a Feasibility Study (FS) that evaluates possible remedies. The FS becomes the basis for selection of a remedy that effectively eliminates the threat posed by contaminants at the site. The RI/FS results in a Record of Decision (ROD)

describing the cleanup that will be carried out and documenting the decisions that led to the chosen remedy.

The state initiates a variety of activities to inform and involve the public during the remedial process.

Throughout the remedial process, the state encourages public involvement by giving the public a key role in the remedy selection process of the RI/FS. Public meetings, newsletters, fact sheets, and project documents contribute to the exchange of information and provide opportunity for comment.

The state achieves successful hazardous waste remediation with the cooperation of many groups.

The RI/FS process requires a detailed examination of a site to fully understand its impact on public health and the environment before deciding on a remedy. Because of this, State engineers, geologists, chemists, and health specialists work with consultants, contractors, municipalities, potentially responsible parties, and citizens to investigate the contamination and select an appropriate remedy. The process can take up to two years to complete.

The sections below describe how the state chooses on an appropriate remedy.

Remedial Investigation (RI)

The RI defines the threat to public health and the environment.

The responsible party or DEC performs an RI at each Class 2 inactive hazardous waste disposal site after preliminary investigations have shown that contaminants pose a significant threat to public health or the environment. Through extensive sampling and laboratory analyses, the RI identifies the length, depth and width of contamination, defines the pathways of migration and measures the degree of contamination in surface water, groundwater, soils, air, plants, and animals. Information gathered during the RI fully describes the hazardous waste problem at the site so that the appropriate remedy can be selected.

DOH evaluates ways in which people may be exposed to hazardous waste.

DOH reviews and recommends activities that will be performed during the RI to ensure that a complete picture of potential health impacts is understood. Such activities include identifying the ways

contamination can reach people, such as through direct contact, eating, drinking, or breathing.

Feasibility Study (FS)

Remedial action choices are developed during the FS.

The Feasibility Study uses RI information to develop alternative remedies that will eliminate the site's threat to public health or the environment. Wherever feasible, the state selects a remedy that permanently reduces or eliminates the contamination.

The state evaluates the remedial alternatives to reach a balanced decision that protects people and the environment.

The responsible party and DEC screen each alternative to make sure the remedy is technically suitable for the site. Following the initial screening, DEC and DOH weigh the remaining alternatives against a number of other conditions, including:

- overall protection of public health and the environment
- reduction in toxicity, mobility and volume of hazardous waste (e.g., by thermal destruction, biological or chemical treatments or containment wall construction)
- long-term effectiveness and permanence
- short-term effectiveness and potential impacts during remediation
- implementation and technical reliability
- compliance with statutory requirements
- community acceptance
- cost.

DEC prepares the proposed remedial action plan for public comment.

The outcome of the selection process is the recommendation of a remedy that best satisfies a combination of these conditions. The remedy becomes part of a proposal that is presented to the public for comment.

Proposed Remedial Action Plan and Public Comment

The state presents the proposed remedial action plan to the public.

After the RI/FS is completed, DEC and DOH hold a public meeting to propose the remedial solution. The Proposed Remedial Action

Plan (PRAP) summarizes the decision that led to the recommended remedial action by discussing each alternative and the reasons for choosing or rejecting it.

Public comment can make a difference in the remedial action plan.

The public is encouraged to review the PRAP and make comments either at the meeting or during the comment period that follows. The comments are reviewed and compiled in a Responsiveness Summary and modifications to the proposed remedial action plan may be made. Additional public notice is required if a modified remedial action plan differs significantly from the earlier selection.

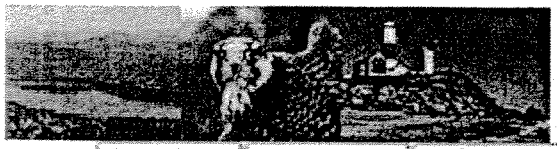
The final remedial decision is documented in the record of decision.

DEC drafts a Record of Decision (ROD) which includes the selected remedial action, the Responsiveness Summary and a bibliography of documents that were used to reach the remedial decision. DOH and DOL have an opportunity to comment on the draft ROD before final DEC approval. When the ROD is finalized, remedial design and construction can begin.

For a full explanation of the ROD, see the companion fact sheet, Record of Decision.

For more information e-mail the Division of Environmental Remediation.

Back to top of page



Fact Sheet: Interim Remedial Measures (IRM)

More information from this division:

Division of Environmental Remediation
More Remediation Fact Sheets

New York State's Inactive Hazardous Waste Disposal Site Remedial Program begins with the discovery of a potential hazardous waste site and follows a path of investigation, remedy selection, design, construction and monitoring. This fact sheet highlights the **Interim Remedial Measure (IRM),** a remedial action.

Interim Remedial Measures

IRM defined.

An IRM is a discrete set of planned actions for both emergency and non-emergency situations that can be conducted without the extensive investigation and evaluation of a Remedial Investigation/Feasibility Study (RI/FS).

An IRM can be part of or the full remediation of a site.

An IRM is designed to be a permanent part of the final remedy. Sometimes, an IRM achieves the remedial goal for a site and no further action is required. When an IRM constitutes the entire remedy, DEC drafts a Proposed Remedial Action Plan (PRAP) that proposes no further action at the site and solicits public comment.

An IRM provides a quick solution to a defined problem.

An IRM is extremely adaptable. It covers a variety of activities, large and small, to remediate an array of diverse, well-defined problems at a site. Some of these problems may be contaminated soils, surface and groundwater, debris, sediments, drinking water supplies, buried and abandoned drums of waste and bulk storage tanks.

Remedial activities carried out under an IRM include:

- Removing wastes and contaminated materials, including contaminated soil, sediments and groundwater.
- Erecting access controls such as fences.
- Removing drums of waste and bulk storage tanks.
- Constructing diversion ditches, groundwater collection systems, leachate collection systems, and gas venting systems.
- Pumping and treating contaminated groundwater.
- Treating contaminated soil on-site using innovative technologies such as soil vapor extraction.
- Installing individual drinking water filter systems.
- Demolishing and removing contaminated buildings.

IRMs provide better protection of public health and the environment.

Because of their versatility and the relative speed with which they are applied, IRMs accelerate remedial projects. The sooner sites are remediated, the sooner the public and the environment are protected. In addition, accelerated remedial projects often mean reduced remedial costs.

DEC discusses IRMs with the affected communities.

In emergencies, IRMs must be implemented quickly to be most effective, making it impractical to hold public meetings and comment periods prior to the IRM actions. For time-critical IRMs, the Project Manager prepares a fact sheet describing the IRM for distribution to local officials. The fact sheet is sent to interested parties and residents adjacent to the site. If time does not permit mailing the fact sheet prior to implementation of the IRM, DEC staff may telephone the information to local officials and conduct door-to-door notifications of residents.

For non-time-critical IRMs, the Project Manager conducts an availability session or public information meeting to explain the proposed IRM and listen to comments from local officials and the public.

State and federal agencies and RPs carry out IRMs.

DEC carries out IRMs at State-funded sites. Responsible Parties (RPs) perform IRMs at their sites under consent orders. EPA (the federal Environmental Protection Agency) carries out IRMs, calling them Emergency Response Actions, at sites on the National Priorities List.

DEC also carries out emergency actions at non-registry sites.

DEC's emergency response actions, such as drum removals, are carried out to prevent, mitigate or remedy environmental damage at sites not listed in the registry of inactive hazardous waste disposal sites.

For more information E-mail the Division of Environmental Remediation.

Back to top of page

Fact Sheet: Record of Decision (ROD)

More information from this division:

Division of Environmental Remediation
More Remediation Fact Sheets

The Department of Environmental Conservation (DEC), along with the Departments of Health (DOH) and Law (DOL), is responsible for ensuring the cleanup of inactive hazardous waste disposal sites across the state. Under New York State's Inactive Hazardous Waste Disposal Site Remedial Program, the process begins with the discovery of a potential hazardous waste site and follows a path of thorough investigation, remedy selection, design, construction and monitoring. This fact sheet highlights one stage in the comprehensive process, the **Record of Decision (ROD)**.

Record of Decision

The ROD contains results of the remedial investigation and remedy selection process.

The Record of Decision (ROD) presents the remedial action plan for an inactive hazardous waste disposal site and documents the information and rationale used to arrive at the decision.

The ROD is the culmination of extensive investigations and a remedy selection that identifies a solution to remove significant threats to the public health and the environment. (For more on this, see the fact sheet entitledRemedial Investigation/Feasibility Study.) It serves as the definitive record of the remedy selection process for the site and a convenient reference to other documents that were developed during the remedy selection process.

DEC gives the final approval to the ROD.

The final ROD is approved by the Department following public comment and review of the proposed remedial action plan. The project then moves on to remedial design and construction.

ROD Contents

The ROD summarizes information used to select the remedial action.

Each ROD produced for an inactive hazardous waste disposal site contains information about the site, which identifies the problem and describes the remedial solution. In addition, the decision-making process that yielded the remedial action plan is documented to demonstrate that the appropriate solution was selected. The ROD contains:

- **Site location, description and history:** provides valuable insight into the previous use of the site and identifies vulnerable areas in the surrounding environment such as residential areas and protected wetlands, groundwater, etc.
- **Problem identification:** describes the nature and extent of contamination and the pathways through which contaminants move in the environment.
- **Status of enforcement actions:** provides the enforcement history and current status for the site.
- **Goals for remedial action:** describes the overall goal of remediation, protection of public health and the environment, and remedial goals specific to each site - for example, preventing contaminated groundwater migration.
- **Discussion of remedial alternatives:** presents each potential remedial action, including a "no action" alternative, to show that technical, legal, environmental and public concerns are met.
- **The selected remedial action:** describes the planned remedy.
- **Responsiveness Summary:** documents public comments about the selected remedy. Modifications to the remedial action plan based on public comment are identified in the summary.
- **Administrative Record:** references reports and other documents developed during investigation and remedy selection.

Amendments to the ROD

Amended remedial decisions require additional review and

public input.

Changes to the final remedial action plan may occur in two cases:

1. if the ROD specifically provides for later addition of documents and reserves a portion of the decision to a later time

2. if new and significant information is received or generated after the ROD is finalized.

An amended ROD must go through additional review and public comment periods.

For more information e-mail the Division of Environmental Remediation.

Back to top of page

Fact Sheet: Design and Construction

More information from this division:

Division of Environmental Remediation
More Remediation Fact Sheets

New York State's Inactive Hazardous Waste Disposal Site Remedial Program begins with the discovery of a potential hazardous waste site and follows a path of investigation, remedy selection, design, construction and monitoring. This fact sheet highlights the **Design and Construction** phase of the program.

Design and Construction

The remedial design spells out the technical requirements of construction.

The remedial design details the size, scope and character of a site's remediation - the planned action that will, at a minimum, protect public health and the environment. It translates information from the Remedial Investigation/Feasibility Study, the Record of Decision and additional data gathered during design preparation into clear, precise facts and numbers.

Key participants are Responsible Parties (RPs), state and federal agencies.

RPs are legally responsible for site remediation. For many sites, remedial work is carried out by RPs under DEC oversight. The RPs are responsible for completion and long-term performance of the remedy. For other sites, remedial work is carried out by DEC or EPA.

DEC ensures that all remedial designs effectively protect the environment and conform to the recommendations of the Records of Decision and consent orders.

The NYS Department of Health (DOH) ensures that all remedial designs effectively protect the public and contain community

health and safety considerations that must be implemented during construction.

Design elements include quality control, assurance and contingency plans.

Construction Quality Control (CQC)

A planned system of inspections that is used to directly monitor and control the quality of a construction project. CQC, usually carried out by the contractor, is necessary to achieve quality in the constructed system.

Construction Quality Assurance (CQA)

A planned system of activities to provide assurance to the owner and the permitting agency that all aspects of remedial construction meet design requirements. CQA includes inspections, verifications, audits, tests and evaluations of materials and workmanship to determine and document the quality of the remedial construction.

Contingency Plan

The contingency plan protects the local community in the instance of an accident or emergency caused by remedial activities. Contingency plans may include:

- Name of person responsible for responding in an emergency.
- Schedule for meeting with local, state and federal agencies, the community, local emergency agencies and hospitals.
- First aid and medical information.
- Air monitoring plan if a human health risk exists through inhalation of specified pollutants.
- Spill control and countermeasures plan to prevent contamination of soil, water, air, structures, equipment or material from the discharge of wastes due to spills. Also, to contain the spill and remove and properly dispose of media contaminated from the spill.

Citizen participation activities, which begin when the site is identified, continue through the Design and Construction phases.

When the remedial design is finalized, a fact sheet describing the proposed remedial action is distributed to the community and other interested people. The fact sheet also contains a construction schedule, explanations of the roles of the RP and DEC, details of the contingency plan and descriptions of potential inconveniences, such as excess traffic and noise. A public meeting or availability session may also be held to discuss schedules, changes in traffic patterns, location of monitoring equipment and how the public will be kept informed on progress. DEC staff ensure that all relevant documents about the site remediation are placed in repositories for public review.

At the completion of construction, another fact sheet announcing the end of construction and describing any Operation and Maintenance activities that may have been specified in the Record of Decision (ROD) is distributed to the community.

Remedial construction is carefully monitored.

Key Participants:

DEC's remedial project manager attends progress meetings to discuss the status of and changes in the project, test results, other findings and upcoming activities. The manager ensures that construction is not endangering public health, monitors quality assurance, coordinates remedial activities and promotes citizen participation.

The RP's or DEC's consulting engineer and inspectors test and inspect the constructor's work and confirm that test data are properly recorded and validated. Their main responsibility is to verify that construction conforms to the approved design documents.

DEC oversight ensures that the construction meets all the requirements of the approved design.

No work is performed at a site until DEC has approved the work plan. Oversight consists of two types - office and field. Office oversight includes the review, evaluation and comment on all submittals, reports, data, etc. generated by remedial activities. Field oversight is site dependent and includes consent order requirements, construction according to approved plan, public health and environmental concerns, public sensitivity and the potential for pollutant migration.

Final inspection ensures that all aspects of the design have been met by the construction.

Acceptance of the remedial work signals the next step in the

remedial program - site reclassification.

Sites are often reclassified after remedial construction. Site reclassification signals the conclusion of the remedial construction.

Following remediation, a site usually is reclassified from Class 2, which calls for remedial action to protect public health or the environment, to:

- Class 4, requiring continued operation, maintenance and monitoring, or
- Class 5, requiring no operation, maintenance and monitoring.

If all hazardous wastes have been removed, the site may be removed (delisted) from the Registry of Inactive Hazardous Waste Sites.

Operation and Maintenance may be included in the remedial program.

Included in some remedies are monitoring requirements, which are included in Operation and Maintenance (O&M) Plans. O&M includes visual inspections and upkeep and can include sampling.

For more information e-mail the Division of Environmental Remediation.

Back to top of page

Info for Consumers

New York State Department of Health

Return to Environmental and Occupational Health

Home Page

From the Commissioner

Directory Services

Vital Records

Info for Consumers

Info for Providers

Info for Researchers

Public Health Forum

What is Exposure? - Information Sheet

Exposure is contact. No matter how dangerous a substance or activity, without exposure, it cannot harm you.

Amount of exposure:

Over 400 years ago, a scientist said "...nothing [is] without poisonous qualities. It is only the dose that makes a thing poison." The **dose** is the amount of a substance that enters or contacts a person. An important factor to consider in evaluating a dose is body weight. If a child is exposed to the same amount of chemical as an adult, the child (who weighs less) can be affected more than the adult. For example, children are given smaller amounts of aspirin than adults because an adult dose is too large for a child's body weight.

The greater the amount of a substance a person is exposed to, the more likely that health effects will occur. Large amounts of a relatively harmless substance can be toxic. For example, two aspirin tablets can help to relieve a headache, but taking an entire bottle of aspirin can cause stomach pain, nausea, vomiting, headache, convulsions or death.

Routes of exposure:

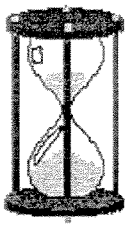
There are three major means by which a toxic substance can come into contact with or enter the body. These are called routes of exposure.

Inhalation (breathing) of gases, vapors, dusts or mists is a common route of exposure. Chemicals can enter and irritate the nose, air passages and lungs. They can become deposited in the airways or be absorbed through the lungs into the bloodstream. The blood can then carry these substances to the rest of the body.

Direct contact (touching) with the skin or eyes is also a route of exposure. Some substances are absorbed through the skin and enter the bloodstream. Broken, cut or cracked skin will allow substances to enter the body more easily.

Ingestion (swallowing) of food, drink, or other substances is another route of exposure. Chemicals that get in or on food, cigarettes, utensils or hands can be swallowed. Children are at greater risk of ingesting substances found in dust or soil because they often put their fingers or other objects in their mouths. Lead in paint chips is a good example. Substances can be absorbed into the blood and then transported to the rest of the body.

The route of exposure can determine whether or not the toxic substance has an effect. For example, breathing or swallowing lead can result in health effects, but touching lead is not usually harmful because lead is not absorbed particularly well through the skin.



Length of exposure:

Short-term exposure is called **acute exposure**. Long-term exposure is called **chronic exposure**. Either may cause health effects that are immediate or health effects that occur days or years later.

Acute exposure is a short contact with a chemical. It may last a few seconds or a few hours. For example, it might take a few minutes to clean windows with ammonia, use nail polish remover or spray a can of paint. The fumes someone might inhale during these activities are examples of acute exposures.

Chronic exposure is continuous or repeated contact with a toxic substance over a long period of time (months or years). If a chemical is used every day on the job, the exposure would be chronic. Over time, some chemicals, such as PCBs and lead, can build up in the body and cause long-term health effects.

Chronic exposures can also occur at home. Some chemicals in household furniture, carpeting or cleaners can be sources of chronic exposure.

Sensitivity:

All people are not equally **sensitive** to chemicals, and are not affected by them in the same way. There are many reasons for this.

- People's bodies vary in their ability to absorb and break down or eliminate certain chemicals due to **genetic differences.**
- People may become **allergic** to a chemical after being exposed. Then they may react to very low levels of the chemical and have different or more serious health effects than nonallergic people exposed to the same amount. People who are allergic to bee venom, for example, have a more serious reaction to a bee sting than people who are not.
- Factors such as **age, illness, diet, alcohol use, pregnancy and medical or nonmedical drug use** can also affect a person's sensitivity to a chemical. Young children are often more sensitive to chemicals for a number of reasons. Their bodies are still developing and they cannot get rid of some chemicals as well as adults. Also, children absorb greater amounts of some chemicals (such as lead) into their blood than adults.

For more information call:

New York State Department of Health
Flanigan Square Room 316
547 River Street
Troy, NY 12180-2216
1-800-458-1158

Send questions or comments to: ceheduc@health.state.ny.us
Revised: June 2000

APPENDIX D

LIST OF PEOPLE POTENTIALLY INTERESTED IN THE FORMER GM-SAGINAW DIVISION BUFFALO FACILITY

Mr. Abul Barkat
Barkat Consulting
420 Kaymar Drive
Amherst, NY 14228

Mr. Edward Belmore
NYSDEC
625 Broadway
Albany, NY 12233-7017

Mr. Daniel David
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Jaspal Walia
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Cameron O'Connor
NYSDOH
584 Delaware Avenue
Buffalo, NY 14202

Mr. Michael Basile
USEPA, Public Information Office
360 Rainbow Boulevard
Niagara Falls, NY 14303

Assemblyman Sam Hoyt
144th Assembly District
General Donovan Bldg.
Buffalo, NY 14203

Congresswoman Louise Slaughter
28th District, U.S. Congress
465 Main Street
Buffalo, NY 14203

Senator Bryon Brown
60th District, NYS Senate
65 Court Street, Room 213
Buffalo, NY 14202

Mr. Lawrence Ennist
NYSDEC
625 Broadway
Albany, NY 12233-7017

Ms. Megan Gollwitzer
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Martin Doster
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Ms. Abby Snyder
NYSDEC, Region 9
270 Michigan Avenue
Buffalo, NY 14203

Mr. Mark VanValkenburg
NYSDOH, Room 205
547 River Street
Troy, NY 12180

Assemblywoman Crystal Peoples
141st Assembly District
792 East Delavan Avenue
Buffalo, NY 14215

Congressman Brian Higgins
27th District
726 Exchange St., Suite 601
Buffalo, NY 14210

Senator William Stachowski
58th District, NYS Senate
2030 Clinton Street
Buffalo, NY 14206

Senator Hillary Rodham-Clinton
U.S. Senate, 203 Guaranty Building
28 Church Street
Buffalo, NY 14202

Senator Charles Schumer
U.S. Senate, Room 620
111 West Huron Street
Buffalo, NY 14202

Councilman David Franczek, Pres.
Buffalo Common Council
1315 City Hall
Buffalo, NY 14202

Councilman Antoine Thompson
Buffalo Common Council
1316A City Hall
Buffalo, NY 14202

Councilwoman Bonnie Russell
Buffalo Common Council
1508 City Hall
Buffalo, NY 14202

Commissioner Tim Wanamaker
Buffalo Community Development
920 City Hall
Buffalo, NY 14202

Mr. Gary Ziolkowski
Buffalo Community Development
304 City Hall
Buffalo, NY 14202

Ms. Allita Steward
Buffalo Community Planner
920 City Hall
Buffalo, NY 14202

Mr. Andrew SanFilippo
Buffalo Comptroller's Office
1225 City Hall
Buffalo, NY 14202

Mr. Robert Rua
Buffalo Director of Safety
406 City Hall
Buffalo, NY 14202

Mr. John Sniderhan
Buffalo Disaster Coordinator
195 Court Street
Buffalo, NY 14202

Mr. David Stebbins
Buffalo Economic Renaissance
617 Main Street
Buffalo, NY 14203

Mr. Thomas Fitzpatrick
Buffalo Hazardous Materials Captain
195 Court Street
Buffalo, NY 14202

Mayor Anthony Masiello
Buffalo Mayor's Office, Room 201
City Hall
Buffalo, NY 14202

Mr. David DiSalvo
Buffalo Planning Department
901 City Hall
Buffalo, NY 14202

Mr. Joe Giambra
Buffalo Public Works Department
503 City Hall
Buffalo, NY 14202

Chairman Edward Pawlik
Buffalo Sewer Authority
City Hall, Room 1038
Buffalo, NY 14202

Mr. Vincent LoVollo
Buffalo Street Sanitation Department
504 City Hall
Buffalo, NY 14202

Ms. Sandy Nasca
Buffalo Urban Renewal Agency
920 City Hall
Buffalo, NY 14202

Mr. Richard Stanton
Buffalo Urban Renewal Agency
901 City Hall
Buffalo, NY 14202

Mr. Patrick Daley
Erie County Emergency Services
95 Franklin Street
Buffalo, NY 14202

Commissioner Laurence Rubin
Erie County Environment & Planning
95 Franklin Street
Buffalo, NY 14202

Mr. Richard Rutkowski
Erie County Environment & Planning
95 Franklin Street
Buffalo, NY 14202

Mr. Paul Kranz
Erie County Environment and Planning
95 Franklin Street
Buffalo, NY 14202

Mr. Michael Raab
Erie County Environment and Planning
95 Franklin Street
Buffalo, NY 14202

Commissioner Anthony Billittier
Erie County Health Department
95 Franklin Street, Room 931
Buffalo, NY 14202

Honorable Joel Giambra
Erie County Executive
95 Franklin Street
Buffalo, NY 14202

Mr. Kevin Kelley
Erie County Legislature Clerk
25 Delaware Avenue
Buffalo, NY 14202

Legislator George Holt
Erie County Legislature, 3rd District
25 Delaware Avenue
Buffalo, NY 14202

Legislator Demon Smith
Erie County Legislature, 7th District
25 Delaware Avenue
Buffalo, NY 14202

Rev. Darius Pridgen
True Bethel Baptist Church
907 East Ferry Street
Buffalo, NY 14211

President Louise Bonner
Board of Block Clubs
70 Harvard Place
Buffalo, NY 14209

President Neddy Anderson
Community Action Coalition
70 Harvard Place
Buffalo, NY 14209

Mr. Don King
Erie County Sportsmen's Federation
55 Winstead Road
Lackawanna, NY 14218

President Organization Rep.
Fillmore LeRoy Residents, Inc.
307 LeRoy Avenue
Buffalo, NY 14214

Margaret Strassner
Hamlin Park Community Action
70 Harvard Place
Buffalo, NY 14209

Mr. Ausar Afrika
Harambee Brooks, Environmental
108 Sycamore Street
Buffalo, NY 14204

Ms. Lois Meyer
League of Woman Voters
731 W. Ferry Street, Apt. 1-KL
Buffalo, NY 14222

Ms. Judith Anderson
Lupus Coalition
2495 Main Street, Room 462
Buffalo, NY 14214

Mr. Alfred Price
SUNY @ Buffalo, Planning Department
3435 Main Street
Buffalo, NY 14214

Chairwoman Jane Jontz
Sierra Club, Niagara Group
62 Lincoln Road
Snyder, NY 14226

Mr. Donald Watkins
Erie County Youth Facility
810 East Ferry Street
Buffalo, NY 14211

Mr. John Hannon
Buffalo Real Property Division
901 City Hall
Buffalo, NY 14202

Faustenia Morrow
WNY Director, Citizen's Environmental Coalition
543 Franklin Street, Suite 2
Buffalo, NY 14202-1109

Mr. Brian P. Smith
Prog. Coordinator, Citizen Campaign for the Environment
3144 Main Street
Buffalo, NY 14214

Mr. James J. Loesch
Chairman, Erie County EMC
National Fuel, 6363 Main Street
Williamsville, NY 14221

Andrew Rudnick
Buffalo Niagara Partnership
665 Main Street
Buffalo, NY 14203

A. Scott Weber, Director
Center for Integrated Waste Management
Jarvis Hall, Room 207
Buffalo, NY 14260

Mr. Dennis Sutton
Office of Strategic Planning, BEMC Staff
920 City Hall
Buffalo, NY 14202

Mr. Joseph A. Gardella, Jr.
BEMC Commissioner
178 Admiral Road
Buffalo, NY 14216

Chairman Bruce Coleman
Buffalo EMC
134 Buffum Street
Buffalo, NY 14210

News Director
WGRZ TV Channel 2
259 Delaware Avenue
Buffalo, NY 14202

News Director
WIVB TV Channel 4
2077 Elmwood Avenue
Buffalo, NY 14207

News Director
WKBW TV Channel 7
7 Broadcast Plaza
Buffalo, NY 14202

Ms. Eileen Klipfel, News Director
Adelphia Channel 13
795 Indian Church Road
West Seneca, NY 14224

News Director
WBEN Radio News/Talk 930
500 Corporate Parkway #200
Buffalo, NY 14226-1263

News Director
WBLK 93.7
14 Lafayette Square #1300
Buffalo, NY 14203-1913

News Director
Citadel Communications
50 James E Casey Drive
Buffalo, NY 14206-2367

Editor
Buffalo News
1 News Plaza, PO Box 100
Buffalo, NY 14240

Editor
WB 49
699 Hertel Avenue, Suite 100
Buffalo, NY 14207

Ms. Annemarie Franczyk
Business First of Buffalo, Inc.
465 Main Street
Buffalo, NY 14203-1793

Buffalo Alternative Press
P.O. Box 729
Buffalo, NY 14205

East Delavan Branch Library
1187 E Delavan
Buffalo, NY 14215

Mr. Mark Scott
News Director, WBFO 88.7/WOLN 91.3
3435 Main Street
Buffalo, NY 14214-3001

News Director
WBNY 91.3
1300 Elmwood Avenue
Buffalo, NY 14222-1004

Mr. Jim Ranney
News Director, WNED 94.5/970 AM
P.O. Box 1263
Buffalo, NY 14240-1263

Editor
Buffalo Gazette
371 Peckham
Buffalo, NY 14206

Editor
Buffalo Rocket
2503 Delaware Avenue
Buffalo, NY 14216-2594

Editor
Challenger
1303 Fillmore Avenue
Buffalo, NY 14211-1205

Editor
ARTVOICE
810 Main Street
Buffalo, NY 14202