

DRI Hazardous Waste Generation Satellite Accumulation SOP

ENVIRONMENTAL SAFETY WARNING:

No chemicals should be discarded to a sanitary or storm sewer drain or garbage (waste) dumpster or can.

1.0 INTRODUCTION

1.1 Nevada and Federal environmental protection laws have specific requirements for the accumulation, treatment, storage and disposal of hazardous wastes. This standard operating procedure (SOP) outlines how the Desert Research Institute (DRI) intends to comply with the requirements for satellite storage accumulation.

2.0 PURPOSE AND SCOPE

2.1 The primary objective of this procedure is to provide employees with the basic information necessary for them to properly classify, contain, label, and store hazardous chemical waste in satellite accumulation areas.

2.2 By following these procedures the DRI will be in compliance with local, state, and federal regulations as they relate to hazardous waste satellite accumulation areas.

2.3 This SOP pertains to all operations generating chemical wastes.

2.4 This SOP does not include the procedures for the storage and disposal of lead painted or contaminated materials; asbestos containing material; universal wastes (fluorescent tubes, mercury switches, etc.); computer monitors and other regulated electronic wastes; biological or radioactive wastes; or chemical wastes which are contaminated with either biohazardous or radioactive materials.

3.0 RESPONSIBILITY

3.1 Division and Center Directors are responsible for:

3.1.1 Being aware of the requirements outlined in the SOP.

3.1.2 Requiring compliance with the applicable elements of the SOP from laboratory/projects within their division.

3.2 DRI Supervision (e.g., Principal Investigators, Supervisors, Project Managers, etc.) are responsible for:

3.2.1 Providing support and verifying compliance with this SOP as applicable for their work areas.

3.2.2 Assigning one or more employees in each area that generates hazardous wastes to coordinate the hazardous waste activities for his/her project.

3.2.3 Verifying that all employees under their supervision who generate or work around hazardous waste are properly trained and aware of the requirements of this SOP within six (6) months of employment and have reviewed these procedures annually basis (or more frequently if conditions, regulations or internal waste disposal procedures change).

3.2.4 Ensuring that until their affected employees have been properly trained, they remain under the direct supervision of trained personnel.

3.3 Hazardous waste coordinators are responsible for:

3.3.1 Coordinating waste collection for their department/area.

DRI Hazardous Waste Generation Satellite Accumulation SOP

3.3.2 Attending annual hazardous waste generator training.

3.3.3 Acting as a liaison between project employees who are generating hazardous wastes and Environmental, Health and Safety (EH&S).

3.3.4 Contacting EH&S when accumulated waste needs to be transferred for disposal.

3.3.5 Auditing satellite waste accumulation practices for their area/department.

3.3.6 Identifying items requiring corrective action and verifying that appropriate corrective action is taken.

3.3.7 Notifying the EH&S department with any safety issues or questions concerning hazardous waste.

3.4 EH&S is responsible for:

3.4.1 Providing the necessary support to management and staff for the provisions outlined in this procedure.

3.4.2 Reviewing and updating hazardous waste procedures as required by changing regulations.

3.4.3 Verifying that affected supervision and area management understand the requirements for hazardous waste generation and satellite accumulation and that they provide their employees with the proper personal protective equipment and supplies to comply with these requirements.

3.4.4 Providing training for the hazardous waste coordinators on an annual basis (or more frequently if conditions, regulations or internal waste disposal procedures change).

3.5 DRI employees are responsible for:

3.5.1 Following procedures regarding the generation of hazardous waste.

3.5.2 Consulting with their supervisor or EH&S if unsure of the procedures to follow.

4.0 HAZARDOUS WASTE MANAGEMENT

4.1 Determination of Hazardous Waste

4.1.1 Hazardous wastes are defined in Nevada Revised Statute (NRS) 459.430 as any waste or combination of wastes, including solids, semisolids, liquids or contained gases, which

4.1.1.1 Because of its quantity or concentration or its physical, chemical or infectious characteristics may:

4.1.1.1.1 Cause or significantly contribute to an increase in mortality or serious irreversible or incapacitating illness; or

4.1.1.1.2 Pose a substantial hazard or potential hazard to human health, public safety or the environment when it is given improper treatment, storage, transportation, disposal or other management.

4.1.1.2 Is identified as hazardous by the department as a result of studies undertaken for the purpose of identifying hazardous wastes.

DRI Hazardous Waste Generation Satellite Accumulation SOP

- 4.1.1.3 The term includes, among other wastes, toxins, corrosives, flammable materials, irritants, strong sensitizers and materials which generate pressure by decomposition, heat or otherwise.
- 4.1.2 U.S. EPA identifies hazardous waste as those materials that are no longer of use that are either specifically listed as a hazardous waste in 40 CFR 261.30 through 261.33 (contact EH&S for a copy) or that have one or more of the following characteristics: ignitable, corrosive, toxic or reactive. (Note: These are the RCRA¹ hazardous wastes. These definitions differ slightly from the DOT and other classification schemes. For example, the DOT considers a liquid with a flashpoint of < 100°F to be flammable, while EPA classifies liquids with a flashpoint < 140°F as ignitable.)
- 4.1.3 It is listed on the manufacturer supplied Material Safety Data Sheet (MSDS) Disposal Section as a hazardous waste.
- 4.1.4 For research-generated materials: internal DRI classification by the generator in consultation with Environmental, Health and Safety has determined that the waste is hazardous.
- 4.1.5 Wastes typically generated at the DRI fall into one of the broad classes of materials listed below
 - 4.1.5.1 Non-RCRA chemical wastes. These may be project generated chemical wastes or off spec. chemicals that are not considered hazardous wastes by the EPA, but are regulated by other agencies, such as the county or City. An example of this kind of waste is an acid waste that is between pH 2 and 5.
 - 4.1.5.2 Universal Wastes. These wastes are regulated by the EPA under the universal waste rules, which apply to certain materials that are ubiquitous such as fluorescent light tubes and mercury switches.
 - 4.1.5.3 RCRA regulated wastes. These are wastes that are considered by EPA as hazardous wastes and are either generated from specified operations, specifically listed as a regulated waste or exhibit one or more hazard characteristics found in the EPA regulations.
- 4.1.6 Wastes generated at DRI are either lab packed or bulked for shipment. A lab pack consists of compatible wastes over packed in a common drum with absorbent materials. A bulked waste is one that is collected in an appropriate DOT-approved container and shipped in that container for disposal. The latter requires a waste profile outlining the waste generation and the components and hazards of the resultant waste and approval for bulking from the disposal company prior to collection.

4.2 Containment of Hazardous Wastes

- 4.2.1 A container of hazardous waste must not be opened, handled or stored in a manner which may rupture the container or cause it to leak. Liquid wastes should be inside a secondary containment device, such as a dishpan or tray, so that any leaks that might develop in the primary container will not contaminate the laboratory.
- 4.2.2 Only compatible wastes may be held within the same secondary containment.
- 4.2.3 Use containers that meet the following specifications:
 - 4.2.3.1 Toxics should be stored in original containers or in vendor-recommended containers (consult MSDS).

¹ RCRA-Resource Conservation and Recovery Act.

DRI Hazardous Waste Generation Satellite Accumulation SOP

- 4.2.3.2 Corrosives should be stored in polypropylene or Teflon containers. Glass containers should be used only with compatible waste mixtures.
 - 4.2.3.3 Flammables/combustibles (including oil) may be stored in poly, glass, or metal containers.
 - 4.2.3.4 Halogenated hydrocarbons (ex. methylene chloride, chloroform) should be stored in glass or metal containers.
 - 4.2.3.5 Reactive materials should be stored in original containers or in vendor-recommended containers. (Consult MSDS).
- 4.2.4 All containers must be kept closed except when adding or removing wastes.
- 4.2.5 Containers should be free from outside contamination.
- 4.2.6 Containers should not be filled to the top. Allow about one inch of headspace for expansion of waste materials during storage. Some waste mixtures may pressurize container. Use care when containing these materials.

4.3 Labeling

- 4.3.1 All containers must be properly labeled. Wording for satellite accumulation labels will be supplied by the Environmental, Health and Safety Department for the various waste streams generated. There are small differences between bulked wastes and those collected for lab packing (see below). Attachment A lists the labeling information for bulk containers currently approved for disposal (noted by profile number) and certain other laboratory waste streams that are generated on a regular basis, but not in sufficient quantity to bulk for disposal.
- 4.3.2 Lab Pack wastes must be labeled as :
- “WASTE” and the hazardous properties of the waste—Flammable (i.e., ignitable), Corrosive, Toxic, Reactive. For more information, refer to the MSDS(s) for the chemical(s).
 - If the waste is generated from lab processes (i.e., not on off spec chemical), an accumulation start date and the composition of the container contents, must be listed. (The latter may be maintained on a log sheet as long as the log can be tied to the specific container by a container number or other discrete identifier.)
- 4.3.3 Bulk containers of RCRA regulated waste must be labeled as follows:
- The words ‘HAZARDOUS WASTE’
 - The accumulation start date and a container full date.
 - The waste profile number that will tie the contents to the previously approved composition of the container contents.
 - The hazardous properties of the waste—Flammable (i.e., ignitable), Corrosive, Toxic, Reactive.
 - The physical state (gas, liquid, solid) of the material.
- 4.3.4 The person generating waste must properly fill out labels. Computer generated labels, using pre-printed stick-on adhesive label such as an address labels may also be used.

DRI Hazardous Waste Generation Satellite Accumulation SOP

4.4 Storage of Hazardous Waste

4.4.1 Waste must be segregated according to compatibility.

4.4.1.1 Do Not Store:

- Acids with Bases
- Oxidizers with Flammables
- Strong Corrosives with Organics
- Water Reactives with Water

Consult Material Safety Data Sheets for proper storage compatibility.

4.2.1.2 Incompatible storage is using an unsuitable container for hazardous waste storage.

4.2.1.3 Incompatible storage is the storage of incompatible chemicals in the same area or cabinet without physical separation. Incompatible chemicals may be stored in the same cabinet only if they are stored in separate secondary containment.

4.4.2 Satellite Accumulation

4.4.2.1 Satellite accumulation is defined as any waste accumulation point at or near the area where the waste is generated which is under the control of the operator of the process generating the waste.

4.4.2.2 Provided EPA does not classify the waste as being an acutely hazardous waste (refer to Attachment B), hazardous waste may be accumulated in a satellite storage area for up to one year. However, once the satellite accumulation equals 55 gallons, the waste must be transferred to the waste holding building. To affect this transfer, completed hazardous waste disposal forms must be submitted to EH&S who will schedule collection of the waste containers for transfer from satellite storage to the hazardous waste storage building.

4.4.2.3 Acutely hazardous waste may be accumulated in a satellite storage area for up to 90 days provided waste accumulation has not reached 1 kilogram (2.2 pounds) of solid or one quart of liquid in the container. (Acutely hazardous wastes are those which contain chemicals denoted with a hazardous waste number starting with the letter 'P', see Attachment B.)

4.4.2.4 When the 55 gallons (or one quart limit or one kilogram amount for acutely hazardous waste) has been reached, the waste must be transferred within 90 days to an off site treatment, storage and disposal facility (TSDF).

4.4.2.5 Containers of waste in the hazardous waste storage building off the Maxey loading dock are not considered to be in satellite storage and must be shipped off site within 90 days of their transfer there.

4.5 Inspection of waste collection areas is required weekly for both satellite accumulation and central accumulations locations. The inspection must include verifying that labeling is correct, storage limitations have not been exceeded, containers are in good condition and closed, wastes are properly segregated, etc. The inspection must be documented on a log that includes the date, inspector's name/initials, any issue identified and the corrective actions taken to correct a deficiency. A sample log sheet is located in Attachment C.

DRI Hazardous Waste Generation Satellite Accumulation SOP

5.0 COLLECTION OF HAZARDOUS WASTE²

5.1 Liquids

- 5.1.1 Waste inorganic acids with or without metals or fluoride contamination may be satellite accumulated for up to one year if not classified as acutely hazardous. They are lab packed for disposal and must be off site within 90 days of the one-year satellite accumulation start date or the satellite accumulation storage quantity limit.
- 5.1.2 Waste caustics with or without metals contamination can be satellite accumulated in poly containers for up to one year if not classified as acutely hazardous and then lab packed for disposal.
- 5.1.3 Waste organic acids such as acetic acid may be accumulated for up to one year if not classified as acutely hazardous and lab packed for disposal.
- 5.1.4 Waste flammable or combustible organic compounds, with the exception of peroxide forming flammable liquids such as ethyl ether which should be stored no longer than 90 days, may be accumulated for up to one year if not classified as acutely hazardous. These solutions may be stored in metal, glass or poly containers.
 - 5.1.4.1 Flammable liquids should be collected separately from combustible liquids where possible. Accumulate acetone, alcohols and acetates separate from hydrocarbon oil, petroleum distillates and printer/copier dispersants.
- 5.1.5 Waste halogenated hydrocarbons such as freons, methylene chloride, and chloroform should be collected separately from flammable and combustible liquids where possible.
- 5.1.6 Waste paint and paint related compounds may be grouped together and collected in satellite accumulation for up to one year. Latex-based paints can be dried and disposed as solid (non-hazardous) waste. Oil or solvent based paints, including spray paints, should be used up or disposed as hazardous wastes.
- 5.1.7 As hazardous waste liquids are collected, maintain a chemical waste log sheet (Attachment D) for each satellite container. Refer to Attachment A for a list of established liquid waste stream profiles for bulked hazardous wastes generated at the DRI.

5.2 Solid/Dry Hazardous Waste

- 5.2.1 Mercury contaminated debris and devices (such as thermometers, mercury batteries, and mercury spill clean up material) should be collected at satellite accumulation points. They will be collected quarterly and disposed of as hazardous waste. Mercury vapor lamps and mercury switches can be recycled with fluorescent light tubes.
- 5.2.2 Fluorescent light tubes, a universal waste, contain mercury and other heavy metals. They are collected by Facilities, stored in a designated area and recycled. Please note that Lockwood Landfill in northern Nevada even prohibits the 'green' fluorescent tubes from their landfill
- 5.2.3 Granular or powdered materials should be collected in vendor recommended containers. Consult the MSDS for proper storage information.

² Do not mix different waste streams without consulting with EH&S as doing so may significantly increase the cost of disposal. (For example disposal costs for mercury containing wastes are six times that for most non-mercury containing wastes.)

DRI Hazardous Waste Generation Satellite Accumulation SOP

- 5.2.3.1 Material that is acutely toxic (also known as P waste) should be collected quarterly for lab packing.
- 5.2.3.2 Some solid waste is compatible with local trash and debris collection (e.g., sodium chloride and glucose). However, both Clark and Washoe County have provisions prohibiting hazardous chemicals in the local landfill and in Washoe County, an industrial waste release permit is required for innocuous chemicals prior to disposal., therefore, no chemicals may go into the normal trash unless you have reviewed approval from EH&S. In addition, any analytical or permit fees may be passed on to the generating project for this mode of solid waste disposal.
- 5.2.4 Copier and printer supplies. Generally spent supplies and cartridges can be recycled by sending them back to the vendor. Follow vendor provided packaging and shipping instructions.

5.3 Gases

- 5.3.1 Residual gas remaining in vendor owned cylinders is returned to the vendor for cylinder refill and reuse. Be sure when purchasing lecture bottles (which typically hold acutely toxic materials) they are vendor returnable. Disposal costs for compressed gas cylinders and lecture bottles can exceed \$500.00/each depending on the original content. If return to the vendor involves shipping (rather than vendor pick up), all applicable DOT hazardous materials shipping regulations must be followed.
- 5.3.2 Residual gases in disposable containers must be completely used up and all pressure relieved before opening and discarding cylinder. (e.g. "Not to be refilled" propane cylinders for portable torches have a removable valve core after gas has been completely evacuated. Mark empty before sending for metal recycle.)
- 5.4 Empty Containers. An empty container is defined by EPA as a chemical container from which no material can be poured or drained; no material can feasibly be removed by physical methods; and the top, bottom, & side walls do not contain adhered or crusted material³.
 - 5.4.1 Empty containers that have held solid chemicals can be discarded into the broken glass container in lab (or transferred directly to the solid waste dumpster) provided there is no residual chemical present⁴, the labels have been marked through, and the container is relabeled "Empty" or "MT". Chemical residues can be removed by triple rinsing with the smallest amount of liquid that will remove the chemical. The rinsate must be saved as a hazardous waste in a satellite accumulation container. Rinsates of compatible chemicals may be commingled in the same satellite container as long as a log is maintained. Contact EH&S for more detailed information.
 - 5.4.2 Empty containers less than 5 gallon capacity that have contained acidic or alkaline corrosive solutions must be rinsed with water before being disposed. Rinsate can be neutralized and sewered if no other hazardous components are present, otherwise it must be held for waste disposal. Containers can be recycled or disposed as regular trash after triple rinsing, provided the labels are marked through and the container is labeled "Empty" or "MT" and "Triple Rinsed". If disposing of the container in normal trash, the cap or lid should also be triple rinsed and disposed of separately.
 - 5.4.3 Empty containers of 5-10 gallon capacity that have contained flammable, combustible or halogenated hydrocarbons should be dripped dried into suitable satellite waste accumulation

³ A container with a thin uniform layer of film or powder is generally empty.

⁴ However, if the contents was an acutely toxic material, the cases for these kinds of containers it is less costly to dispose of the unrinsed container as hazardous waste rather than generate a liquid waste stream unless it can be commingled with an existing stream generated in the lab.

DRI Hazardous Waste Generation Satellite Accumulation SOP

containers. After all fluids have been evacuated, mark through container label and label "Empty" or "MT". If you have no use for the container, transfer to EH&S for disposal or recycle.

5.4.4 Empty drums 10 to 55 gallon capacity can generally be reused or recycled. Contact EH&S if you generate empty containers in this size range.

5.4.5 If you generate empty containers that do not fit one of these categories, contact EH&S for disposal information

5.5 Non-RCRA Wastes

5.5.1 Certain materials that are not considered by the EPA to be regulated under the Resource Conservation and Recover Act (RCRA) as hazardous wastes cannot be landfilled⁵ or sewerred. Wastes in this category that are produced at the DRI include the following:

5.5.1.2 Liquids in the pH ranges > 2 and < 5.5 or ≥ 9 and < 12 (which are not allowed to be sewerred)

5.5.1.3 Used oil

5.5.1.4 Used antifreeze

5.5.1.5 PCB light ballasts

5.5.1.6 Fluorescent light tubes

5.5.1.7 Batteries (various types)

5.5.1.8 Video display terminals and other electronic components.

5.5.2 Asbestos and asbestos containing materials are another type of non-RCRA regulated waste that require special handling and disposal.

5.5.3 Lead painted or contaminated materials also fall under special removal and disposal requirements.

5.6 Laboratory Glass (other than chemical containers)

5.6.1 Uncontaminated glass, including broken glassware, destined for disposal should be placed in a sturdy, bagged lined cardboard box. When the box is full, it should be taped shut and put into the dumpster.

5.6.2 Contaminated glass should be rinsed with a small amount acetone, methanol or other solvent that will remove the contamination. The rinsate must be collected for chemical waste disposal. The rinsed glass is then packaged for solid waste disposal as above.

5.6.3 If the glassware is heavily contaminated or is broken and would pose a laceration hazard to the worker when rinsing it, it should be packaged as above, but labeled as hazardous solid waste. The latter waste stream is recorded on a "Request for Waste Disposal Form" which is sent to EH&S to schedule pick up.

6.0 OFF SITE DISPOSAL OF HAZARDOUS WASTE

6.1 Currently all off spec chemicals and other liquid wastes generated in quantities less than 5 gallons per year are lab packed for disposal. Off spec chemicals must be listed on a Request for Waste Disposal Form (Attachment E) when they are determined to be waste by the lab. EH&S will schedule a pick up when the form is received. For labs generating mixed wastes in bulk containers, a Disposal Form must be submitted to EH&S when the collection container is full or if the waste has been accumulating for a year. The chemical waste log sheets (Attachment D) for the containers can be submitted in lieu of a disposal form .

⁵ Lockwood Regional Landfill in northern Nevada will not accept any industrial wastes, including non-RCRA chemical wastes without a "Waste Release Permit", therefore no chemicals can be placed in the NNSC dumpsters prior to obtaining the required permit. For additional information contact EH&S.

DRI Hazardous Waste Generation Satellite Accumulation SOP

- 6.2 All site hazardous waste coordinators, supervisors and area managers will be notified 15 working days prior to a waste disposal date. At that time, an inspection of all chemical storage locations should be completed to identify for waste disposal any unwanted, nonuse, past expiration date chemicals or chemicals in deteriorating containers. These must be listed on a Request for Waste Disposal Form (Attachment E) and submitted to EH&S who will arrange for pick up and disposal.
- 6.3 Never bring waste chemicals to the EH&S Office or place them on the Maxey loading dock at the NNSC. Due to lack of storage space at the SNSC, chemicals designated for disposal may not be collected until the day of the actual disposal.

7.0 WASTE MINIMIZATION

- 7.1 Practices that result in the reduction, avoidance, elimination or recovery of waste generated from an industrial process are considered waste minimization. Practices include:
 - 7.1.1 Optimize material inventories to minimize obsolete chemicals.
 - 7.1.2 Design processes to minimize volume and degree of hazard of waste generated.
 - 7.1.3 Eliminate certain materials from use. Replace with less hazardous materials.

8.0 REFERENCES

- 8.1 Nevada Revised Statutes, 459.400 – 459.600.
- 8.2 Title 40 Code of Federal Regulations, Sections 260 - 268.

**DRI Hazardous Waste Generation Satellite Accumulation SOP
Attachment A—Example of Labeling for Liquid Waste Streams**

Ammonia and Peroxide Assay wastes	Hazardous Waste Liquid, basic, inorganic, n.o.s., D002 (ammonia/peroxide analysis) Start Date _____ Full date _____	2171576
Nitrate Assay waste	HAZARDOUS WASTE Waste Corrosive Liquid, acidic, inorganic, n.o.s., D002 (nitrate assay) Start Date _____ Full Date _____	CH202023
Chloride Assay waste	HAZARDOUS WASTE Waste Corrosive Liquids, toxic, n.o.s., D002, D009 (chloride Assay) Start Date _____ Full Date _____	CH222381
GBERL 205 (Lachat wastes)		
Chloride Assay waste	HAZARDOUS WASTE Waste Corrosive Liquids, toxic, n.o.s., D002, D009 (Chloride assay) Start Date _____ Full Date _____	CH222381
Sulfate Assay waste	HAZARDOUS WASTE Waste Corrosive Liquids, toxic, n.o.s., D002, D005 pH ≤ 2 Start Date _____ Full Date _____	CH235908
Ammonium Analysis waste	HAZARDOUS WASTE Waste Corrosive Liquid, basic, inorganic, n.o.s., D002 (Ammonia analysis) Start Date _____ Full date _____	2171576
Phosphate Assay Waste	HAZARDOUS WASTE Waste Corrosive Liquid, acidic, inorganic, n.o.s., D002 (phosphate assay) Start Date _____ Full Date _____	CH202023
GBERL 205, 207, 208 Misc. lab wastes		
DAPI (list components, % of each and pH on waste log)	Toxic liquid waste, n.o.s. (DAPI) Start Date _____	N/A
Phenol/Chloroform/Isoamyl Alcohol (list % of each and pH on waste log)	Toxic liquid waste, n.o.s. Start Date _____	N/A
Acid Wastes (aqueous solutions, with pH ≤ 2)	Waste Corrosive liquid, pH _____ (list components and % of each n waste log) Start Date _____	N/A
Other aqueous waste streams, pH > 2 and < 12.5	Aqueous Lab Waste (list components and % of each on waste log) Start Date _____	N/A

Attachment A.2—Example of Labeling for SNSC Liquid Waste Streams

Env. Chem. Lab	Suggested Label	Profile if bulk
Nitric acid with selenium	HAZARDOUS WASTE Waste Corrosive Liquid, acidic, inorganic, n.o.s., D002, D010 Start Date _____ Full Date _____	CH60866

DRI Hazardous Waste Generation Satellite Accumulation SOP
ATTACHMENT B
Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Materials

Hazardous waste that is classified as acutely hazardous contains one or more of the following:

CAS Number	Substance
107-20-0	Acetaldehyde, chloro-
591-08-2	Acetamide, N-(aminothioxomethyl)-
640-19-7	Acetamide, 2-fluoro
62-74-8	Acetic acid, fluoro, sodium salt
591-08-2	1-Acetyl-2-thiourea
107-02-8	Acrolein
116-06-3	Aldicarb
1646-88-4	Aldicarb sulfone
309-00-2	Aldrin
107-18-6	Allyl alcohol
20859-73-8	Aluminum phosphide (R,T)
2763-96-4	5-(Aminomethyl)-3-isoxazolol
504-24-5	4-Aminopyridine
131-74-8	Ammonium picrate (R)
7803-55-6	Ammonium vanadate
506-61-6	Argentate(1-), bis(cyano-C)-, potassium
7778-39-4	Arsenic Acid H(3)AsO(4)
1327-53-3	Arsenic oxide As(2)O(3)
1303-28-2	Arsenic oxide As(2)O(5)
1303-28-2	Arsenic pentoxide
1327-53-3	Arsenic trioxide
692-42-2	Arsine, diethyl-
696-28-6	Arsonous dichloride, phenyl-
151-56-4	Aziridine
75-55-8	Aziridine, 2-methyl-
542-62-1	Barium cyanide
106-47-8	Benzenamine, 4-chloro-
100-01-6	Benzenamine, 4-nitro-
100-44-7	Benzene, (chloromethyl)-
51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2- <(methylamino)ethyl]-, (R)-
122-09-8	Benzeneethanamine, alpha, alpha-dimethyl-
108-98-5	Benzenethiol

Key
 Ignitable Waste (I)
 Corrosive Waste (C)
 Reactive Waste (R)
 Toxic Waste (T)

* (I,T) should be used to specify mixtures containing ignitable and toxic constituents.

DRI Hazardous Waste Generation Satellite Accumulation SOP

ATTACHMENT B

Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Material

CAS Number	Substance
1563-66-2	7-Benzofuranol, 2,3-dihydro-2,2-dimethyl-,methylcarbamate
57-64-7	Benzoic acid, 2-hydroxy-, compd. with (3aS-cis)-<1,2,3,3a,8,8a-hexahydro-1,3a,8-trimethyl-pyrrolo-< [2,3-b]indol-5-yl methylcarbamate ester (1:1)
{1}81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)- and salts when present at concentrations< greater than 0.3%
100-44-7	Benzyl chloride
7440-41-7	Beryllium Powder
598-31-2	Bromoacetone
357-57-3	Brucine
39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-,< O-[methylamino) carbonyl] oxime
592-01-8	Calcium cyanide
592-01-8	Calcium cyanide Ca(CN)(2)
55285-14-8	Carbamic acid, [(dibutylamino)- thio]methyl-,< 2,3-dihydro-2,2-dimethyl-7-benzofuranyl ester
644-64-4	Carbamic acid, dimethyl-, 1-[(dimethyl-amino) carbonyl]- 5-methyl-1H-pyrazol-3-yl ester
119-38-0	Carbamic acid, dimethyl-, 3-methyl-1-<(1-methylethyl)-1H-pyrazol-5-yl ester
1129-41-5	Carbamic acid, methyl-, 3-methylphenyl ester
1563-66-2	Carbofuran
75-15-0	Carbon disulfide
75-44-5	Carbonic dichloride
55285-14-8	Carbosulfan
107-20-0	Chloroacetaldehyde
106-47-8	p-Chloroaniline
5344-82-1	1-(o-Chlorophenyl)thiourea
542-76-7	3-Chloropropionitrile
544-92-3	Copper cyanide
544-92-3	Copper cyanide Cu(CN)
64-00-6	m-Cumenyl methylcarbamate Cyanides (soluble cyanide salts), not< otherwise specified
460-19-5	Cyanogen
311-45-5	Diethyl-p-nitrophenyl phosphate
506-77-4	Cyanogen chloride
506-77-4	Cyanogen chloride (CN)Cl
131-89-5	2-Cyclohexyl-4,6-dinitrophenol
542-88-1	Dichloromethyl ether
696-28-6	Dichlorophenylarsine
60-57-1	Dieldrin
692-42-2	Diethylarsine
297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate

DRI Hazardous Waste Generation Satellite Accumulation SOP

ATTACHMENT B

Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Material

55-91-4	Diisopropylfluorophosphate (DFP)
CAS Number	Substance
309-00-2	1,4,5,8-Dimethanonaphthalene,<1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-,<(1alpha,4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-
465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-< hexachloro-1,4,4a,5,8,8a-hexahydro-,(1alpha,< 4alpha,4abeta,5beta,8beta,8abeta)-
60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirane, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-< octahydro-,(1alpha,2beta,2alpha,< 3beta,6beta,6alpha,7beta,7alpha)-
{1}72-20-8	2,7,3,6-Dimethanonaphth[2,3-b] oxirine,< 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,< 7,7a-octahydro-, (1alpha, <2beta,2beta,3alpha,6alpha,6beta, <7beta,7alpha)-, & metabolites
60-51-5	Dimethoate
122-09-8	alpha, alpha-Dimethylphenethylamine
644-64-4	Dimetilan
{1}534-52-1	4,6-Dinitro-o-cresol, and salts
51-28-5	2,4-Dinitrophenol
88-85-7	Dinoseb
152-16-9	Diphosphoramidate, octamethyl-
107-49-3	Diphosphoric acid, tetraethyl ester
298-04-4	Disulfoton
541-53-7	Dithiobiuret
26419-73-8	1,3-Dithiolane-2-carboxaldehyde,<2,4-dimethyl-, O- [(methylamino)-carbonyl]oxime
115-29-7	Endosulfan
145-73-3	Endothall
72-20-8	Endrin
72-20-8	Endrin, & metabolites
51-43-4	Epinephrine
460-19-5	Ethanedinitrile
23135-22-0	Ethanimidothioic acid, 2-(dimethylamino)-N-<[[[(methylamino) carbonyl]oxy]-2-oxo-, methyl ester
16752-77-5	Ethanimidothioic acid,N[[[(methylamino)carbonyl]oxy]-, methyl ester
107-12-0	Ethyl cyanide
151-56-4	Ethyleneimine
52-85-7	Famphur
7782-41-4	Fluorine
640-19-7	Fluoroacetamide
62-74-8	Fluoroacetic acid, sodium salt
23422-53-9	Formetanate hydrochloride.
17702-57-7	Formparanate.
628-86-4	Fluminic acid, mercury(2+) salt (R,T)

DRI Hazardous Waste Generation Satellite Accumulation SOP

ATTACHMENT B

Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Material

76-44-8	Heptachlor
CAS Number	Substance
757-58-4	Hexaethyl tetraphosphate
79-19-6	Hydrazinecarbothioamide
80-34-4	Hydrazine, methyl-
74-90-8	Hydrocyanic acid
74-90-8	Hydrogen cyanide
7803-51-2	Hydrogen phosphide
465-73-6	Isodrin
119-38-0	Isolan
64-00-6	3-Isopropylphenyl N-methylcarbamate
2763-96-4	3(2H)-Isoxazolone, 5-(aminomethyl)-
15339-36-3	Manganese, bis(dimethylcarbamodithioato-S,S')-,
15339-36-3	Manganese dimethyldithiocarbamate
62-38-4	Mercury, (acetato-O)phenyl-
628-86-4	Mercury fulminate (R,T)
62-75-9	Methanamine, N-methyl-N-nitroso-
624-83-9	Methane, isocyanato-
542-88-1	Methane, oxybis[chloro-
509-14-8	Methane, tetranitro- (R)
75-70-7	Methanethiol, trichloro-
23422-53-9	Methanimidamide, N,N-dimethyl-N'-[3-[[methylamino)-carbonyl]oxy]phenyl]-, monohydrochloride
17702-57-7	Methanimidamide, N,N-dimethyl-N'-[2-methyl-4-< [[methylamino)carbonyl]oxy]phenyl]-
115-29-7	6,9-Methano-2,4,3-benzodioxathiepin,<6,7,8,9,10,10-hexachloro-< 1,5,5a,6,9,9a-hexahydro-, 3-oxide
76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro
2032-65-7	Methiocarb
16752-77-5	Methomyl
60-34-4	Methyl hydrazine
624-83-9	Methyl isocyanate
75-86-5	2-Methylactonitrile
298-00-0	Methyl parathion
1129-41-5	Metolcarb
315-18-4	Mexacarbate
86-88-4	alpha-Naphthylthiourea
13463-39-3	Nickel carbonyl
13463-39-3	Nickel carbonyl Ni(CO)(4), (T-4)-
557-19-7	Nickel cyanide

DRI Hazardous Waste Generation Satellite Accumulation SOP

ATTACHMENT B

Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Material

557-19-7	Nickel cyanide Ni(CN)(2)
CAS Number	Substance
{1}54-11-5	Nicotine, & salts
10102-43-9	Nitric oxide
100-01-6	p-Nitroaniline
10102-44-0	Nitrogen dioxide
10102-43-9	Nitrogen oxide NO
10102-44-0	Nitrogen oxide NO(2)
55-63-0	Nitroglycerine (R)
62-75-9	N-Nitrosomethylamine
4549-40-0	N-Nitrosomethylvinylamine
152-16-9	Octamethylpyrophosphoramidate
20816-12-0	Osmium oxide OsO(4), (T-4)-
20816-12-0	Osmium tetroxide
145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
23135-22-0	Oxamyl
56-38-2	Parathion
131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
51-28-5	Phenol, 2,4-dinitro-
{1}534-52-1	Phenol, 2-methyl-4,6-dinitro- & salts
88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
315-18-4	Phenol, 4-(dimethylamino)-3,5-dimethyl-,< methylcarbamate (ester).
2032-65-7	Phenol, (3,5-dimethyl-4-(methylthio)-,methylcarbamate
64-00-6	Phenol, 3-(1-methylethyl)-, methyl carbamate.
2631-37-0	Phenol, 3-methyl-5-(1-methylethyl)-, methyl carbamate
62-38-4	Phenylmercury acetate
103-85-5	Phenylthiourea
298-02-2	Phorate
75-44-5	Phosgene
7803-51-2	Phosphine
311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl]ester
298-04-2	Phosphorodithioic acid, O,O-diethyl< S-[(ethylthio)methyl] ester
60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
55-91-4	Phosphorofluoridic acid, bis< (1-methylethyl) ester
56-38-2	Phosphorothioic acid, O,O-diethyl O-(4 -nitrophenyl) ester
297-92-2	Phosphorodithioic acid, O,O-diethyl O- pyrazinyl ester
52-85-7	Phosphorothioic acid, O- [4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester

DRI Hazardous Waste Generation Satellite Accumulation SOP
ATTACHMENT B
Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Material

CAS Number	Substance
298-00-0	Phosphorothioic acid, O, O-dimethyl O-(4-nitrophenyl)ester
57-47-6	Physostigmine
57-64-7	Physostigmine salicylate
78-00-2	Plumbane, tetraethyl-
151-50-8	Potassium cyanide
151-50-8	Potassium cyanide K(CN)
506-61-6	Potassium silver cyanide
2631-37-0	Promecarb
116-06-3	Propanal, 2-methyl-2-(methylthio)-,O- [(methylamino)carbonyl]oxime
1646-88-4	Propanal, 2-methyl-2-(methyl-sulfonyl)-, O-[(methylamino) carbonyl] oxime
107-12-0	Propanenitrile
542-76-7	Propanenitrile,3-chloro-
75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
55-63-0	1,2,3-Propanetriol, trinitrate (R)
598-31-2	2-Propanone, 1-bromo-
107-19-7	Propargyl alcohol
107-02-8	2-Propenal
107-18-6	2-Propen-1-ol
75-55-8	1,2-Propylenimine
107-19-7	2-Propyn-1-ol
504-24-5	4-Pyridinamine
{1}54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
57-47-6	Pyrrolo[2,3-b]indol-5-ol, 1,2,3,3a,8,8a- hexahydro-1,3a,8-trimethyl-, methylcarbamate (ester), (3aS-cis)-
12039-52-0	Selenious acid, dithallium(1+) salt
630-10-4	Selenourea
506-64-9	Silver cyanide
506-64-9	Silver cyanide Ag(CN)
26628-22-8	Sodium azide
143-33-9	Sodium cyanide
143-33-9	Sodium cyanide Na(CN)
{1}57-24-9	Strychnidin-10-one, & salts
357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
{1}57-24-9	Strychnine, & salts
7446-18-6	Sulfuric acid, dithallium(1+) salt

DRI Hazardous Waste Generation Satellite Accumulation SOP
ATTACHMENT B
Lists of Hazardous Waste, 40 CFR 261.31(e) Acutely Hazardous Material

CAS Number	Substance
3689-24-5	Tetraethyldithiopyrophosphate
78-00-2	Tetraethyl lead
107-49-3	Tetraethyl pyrophosphate
509-14-8	Tetranitromethane (R)
757-58-4	Tetraphosphoric acid, hexaethyl ester
1314-32-5	Thallic oxide
1314-32-5	Thallium oxide Tl(2)O(3)
12039-52-0	Thallium(I) selenite
7446-18-6	Thallium(I) sulfate
3689-24-5	Thiodiphosphoric acid, tetraethyl ester
39196-18-4	Thiofanox
541-53-7	Thiomidodicarbonic diamide [(H(2)N)C(S)](2)NH
108-98-5	Thiophenol
79-19-6	Thiosemicarbazide
5344-82-1	Thiourea, (2-chlorophenyl)-
86-88-4	Thiourea, 1-naphthalenyl-
103-85-5	Thiourea, phenyl-
26419-73-8	Tirpate
8001-35-2	Toxaphene
75-70-7	Trichloromethanethiol
7803-55-6	Vanadic acid, ammonium salt
1314-62-1	Vanadium oxide V(2)O(5)
1314-62-1	Vanadium pentoxide
4549-40-0	Vinylamine, N-methyl-N-nitroso-
{1}81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
137-30-4	Zinc, bis(dimethylcarbamo-dithioato-S,S')-,
557-21-1	Zinc cyanide
557-21-1	Zinc cyanide Zn(CN)(2)
1314-84-7	Zinc phosphide Zn(3)P(2), when present at < concentrations greater than 10% (R,T)
137-30-4	Ziram

DRI Hazardous Waste Generation Satellite Accumulation SOP

ATTACHMENT E-DRI Request for Waste Disposal

<http://safety.dri.edu/Forms/Disposal.pdf>

Request for Waste Disposal

Requestor's Name _____

ext. _____

Dept. No. _____

Waste Location	Description of Waste: quantity, concentration, name of material	pH	Nature of Hazard or Hazard Class

Print Name of Supervisor _____

Supervisor Signature Date

Waste Disposal Personnel Date

ATTACHMENT E-DRI Request for Waste Disposal

<http://safety.dri.edu/Forms/Disposal.pdf>

SPECIAL INSTRUCTIONS FOR REQUEST FOR WASTE DISPOSAL

The following information is critical for proper disposal of waste:

Description of Waste:

- Spell out chemical name, no abbreviations
- Also include if the material is unused, expired chemical or rejected product or material
- Is it a mixture containing some percentage of water plus other chemical or biological components?

pH:

- Provide the best data available—via analysis or MSDS

Nature of Hazard (See container label or MSDS for hazard information):

- Is the waste ignitable (flashpoint < 140°F)?
- Is the waste reactive?
- Is the waste an OSHA regulated carcinogen
- Is the waste toxic?
- Is the waste an oxidizer?
- Is the waste also biohazardous or radioactive?
- Any other known hazards or special handling procedures?

Send Completed form to Martha McRae, M/S 016

Left blank on purpose