

Attachment 1

Waste Analysis Plan

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## SECTION II. C

# WASTE ANALYSIS PLAN

## WASTE ANALYSIS PLAN

Michigan Public Act 451 Rules R 299.9504(i)(c), R 299.9508, and R 299.9605(i) and 40 Code of Federal Regulations (CFR) 270.14(b)(3) and 264.13(b) and (c), which are adopted by reference (ABR) in R 299.11003, establish requirements for Waste Analysis Plans (WAPs) for hazardous waste management facilities. This section addresses requirements for a WAP for the hazardous waste management units and the hazardous waste management facility for The Dow Chemical Company (Dow) Michigan Operations Midland Plant (MID 000 724 724) and Salzburg Landfill (MID 980 617 435) facilities. These two facilities will be collectively referred to within the WAP as Michigan Operations. All activities associated with the WAP will be conducted by qualified personnel for Dow's Michigan Operations Midland, Michigan facility.

This section is organized as follows:

### A. CAPTIVE FACILITY ACCEPTING CERTAIN OFF-SITE AND NON-DOW WASTE

#### A(1) Initial Waste Characterization Requirements

- A(1)(a) Generator Waste Characterization Discrepancies
- A(1)(b) Waste Profile Review Frequency
- A(1)(c) Additional Waste Analysis Requirements

#### A(2) Waste Acceptance Procedures

- A(2)(a) Review Paperwork
- A(2)(b) Visual Inspection of Waste
- A(2)(c) Waste Screening/Fingerprinting
- Table A-1 Waste Analysis Procedures
- Table A-2 Sampling Procedures

#### A(3) Procedures to Ensure Compliance with Land Disposal Restriction (LDR) Requirements

- A(3)(a) Spent Solvent and Dioxin Wastes
- A(3)(b) Listed Wastes
- A(3)(c) Characteristic Wastes
- A(3)(d) Radioactive Mixed Waste
- A(3)(e) Leachates

A(3)(f)	Laboratory Packs
A(3)(g)	Contaminated Debris
Table A-3	Contaminated Debris Categories
A(3)(h)	Waste Mixtures and Wastes with Overlapping Requirements
A(3)(i)	Dilution and Aggregation of Wastes
A(4)	Comparable Fuels

**B. NOTIFICATION, CERTIFICATION, AND RECORDKEEPING REQUIREMENTS**

B(1)	Retention of Generator Notices and Certifications
B(2)	Notification and Certification Requirements for Treatment Facilities
B(3)	Waste Shipped to Subtitle C Facilities
B(4)	Waste Shipped to Subtitle D Facilities
B(5)	Recyclable Materials
B(6)	Record Keeping

Appendix II.C-1 Quality Assurance/Quality Control Plan

Appendix II.C-2 Land Disposal Restriction Procedures

Figure II.C-1 Example Generator Waste Characterization Form

Figure II.C-2 Logic Diagram for Treatment and Disposal of Hazardous Waste

## **A. CAPTIVE FACILITY ACCEPTING CERTAIN OFF-SITE AND NON-DOW WASTE**

Dow's Michigan Operations is a captive facility that generates waste on-site and also receives certain wastes generated off-site or from non-Dow generators in support of Dow operations or strategic business relationships. A waste is considered from "Dow," for purposes of this categorization, if Dow has any ownership in the company generating the waste (e.g. joint venture, subsidiary). Waste received from off-site or non-Dow generators include:

- Other sites owned by The Dow Chemical Company (e.g., Freeport, Texas);
- Dow subsidiaries and joint ventures (e.g., , Union Carbide Corporation; Dow AgroSciences; Dow Corning; Rohm and Haas Company);
- On-site non-Dow facilities (formerly Dow) located within the Facility Boundary, if the wastes were originally Dow wastes approved to be received at the kiln or landfill (the change of ownership for certain Michigan Operations plants associated with Styron LLC is an example of this scenario) ;
- Off-site non-Dow facilities (formerly Dow) not located within the Facility Boundary, if the wastes were originally Dow wastes approved to be received at the kiln or landfill (the change of ownership of Dow's facilities in Dalton, Georgia and Allyn's Point, Connecticut associated with Styron LLC is an example of this scenario);
- On-site non-Dow facilities located within or contiguous to Dow's Midland Plant Site (Industrial Park concept) that have a strategic business relationship with Dow (e.g., landlord/tenant, supplier/receiver of raw material or service) and whose wastes are similar to wastes already approved to be received at the kiln or landfill;
- Off-site non-Dow facilities that are or will be in a strategic business relationship with Dow (e.g., landlord/tenant, supplier/receiver of raw material or service) whose wastes are similar to wastes already approved to be received at the kiln or landfill;
- Off-site non-Dow facilities that generate waste with heating value of greater than 5000 BTU/lb for liquids or 100 BTU/standard cubic foot for gas. These waste streams will be used to reduce consumption of natural gas and Diesel fuel at the incinerator; and

- Small quantities of waste as a "public service" (e.g., household hazardous waste, waste from local educational and not-for-profit institutions). These services are provided at no charge.

The off-site and/or non-Dow waste locations can and will change over time.

Dow's Michigan Operations has developed a WAP to ensure that its facility at Midland, Michigan will accept only wastes that it is authorized to accept. The hazardous wastes stored, treated and disposed of at Dow's Michigan Operations will be properly characterized prior to waste acceptance. All generators will be required to provide a complete waste characterization, including chemical analysis when appropriate. Waste screening will be conducted on every shipment of waste to ensure that the waste conforms to the waste profile for the generator and information on incoming manifests and to ensure that the waste is properly managed within the facility.

All analyses performed pursuant to this application will be consistent with the quality assurance and quality control (QA/QC) plan included in this WAP. All samples for the purpose of waste characterization will be collected, transported, stored, and disposed of by trained and qualified individuals in accordance with the QA/QC plan. For a more detailed description of the quality assurance process, refer to the Dow Chemical Michigan Operations License Reapplication (Appendix C of the Sampling and Analysis Plan which is Appendix E of Section V, Environmental Monitoring) and the Salzburg Landfill Operating License Reapplication (Section V., Environmental Monitoring, Appendix A, Sampling and Analysis Plan).

In accordance with R 299.9609 and 40 CFR 264.73 and 264, Appendix I, which are ABR in R 299.11003, Dow's Michigan Operations will retain all records and results of waste determinations performed as specified in 40 CFR 264.13, 264.17, 264.314, 264.1034, 264.1063, 264.1083, 268.4(a) and 268.7 in the facility operating record until closure of the facility.

**A(1) Initial Waste Characterization Requirements for Generators**  
{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(b)(5) which is ABR in R 299.11003}

Dow's Michigan Operations will require the following waste profile information for initial waste shipments from all generators prior to waste acceptance.

See Figure II.C-1 Example Generator Waste Characterization Form (GWCF).

The GWCF has specific sections that address generator identification, the type of transport container, the chemical composition, the regulatory status of the waste,

physical properties, process knowledge reference, data analysis, reactive chemicals properties, exposure hazards, and cleanup procedures, etc.

The GWCF is completed and evaluated using a computer based waste characterization system. This system enables computer-based input, evaluation, archiving and use of waste characterization data. A printable version of the GWCF can be obtained from the system. All references to the GWCF within this WAP refer to the form and/or the computer-based waste characterization system.

Figure II.C-2 is a logic diagram that a generator can follow in order to determine the proper treatment and disposal of hazardous wastes. The steps include the characterization of a waste initially, the selection of a method of disposal, an assessment of the disposal method, internal tracking procedures and finally treatment. If information is lacking in the GWCF, the process of characterization is repeated.

In addition to the GWCF submitted by the generator, for non-Dow generators Michigan Operations will:

- Require submittal of a representative waste sample or
- Conduct an audit of the generator facility or
- Review industry literature to identify typical waste streams

**A(1)(a) Generator Waste Characterization Discrepancies**  
{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(a)(3) and (4), 264.13(b) and (c), and 264.72 which are ABR in R 299.11003}

Prior to acceptance of the waste for management at the Michigan Operations site, sufficient information is obtained from the waste generator to enable qualified personnel to determine the suitable treatment or disposal method. This information is collected by use of the GWCF. Information is collected to determine if the waste is characteristically hazardous (ignitable, corrosive, reactive, or toxic), or if it meets the definition of one of the RCRA listed hazardous wastes (F, K, P, and U lists). Information is also collected to determine if the waste is hazardous as defined under Part 111 of Michigan Act 451 (toxic or Michigan K, S and U lists).

Regulatory compliance, personnel exposure, environmental impact, technical data, and material handling concerns are reviewed on the basis of available information. After a review by qualified waste characterization reviewers (and if necessary, by other appropriate resources such as Industrial Hygiene, Safety, Emergency Response, Product Technical Centers, and Dow's reactive chemical experts), information on waste preparation, proper handling, packaging, and other requirements is conveyed to the

waste generator. Only wastes meeting Environmental Operations' requirements will be accepted (see the GWCF and Figure II.C-2).

The type of information requested will depend upon the preliminary waste management mode proposed. If sufficient data exists in the GWCF to ensure the appropriate treatment or disposal procedures can be implemented safely, additional analyses will not be performed. In cases where insufficient data is submitted by a waste generator, the generator will be notified and required to provide additional data and/or analysis of the waste. Analyses performed will follow Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) or equivalent methods. The most recent approved version of SW-846 will be used when applicable.

**A(1)(b) Waste Profile Review Frequency**  
{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(a)(3) and 264.13(b)(4) which are ABR in R 299.11003}

All waste characterizations are reviewed and updated by the generator on a specified frequency depending on the unit receiving the waste (see table below). Additionally, a re-characterization and/or analysis will occur whenever a process modification has resulted in a waste change that is significant enough to affect its regulatory status or handling characteristics. A new waste characterization form may need to be filled out if off-site waste arriving at the facility is suitable for treatment at the facility but does not match the accompanying manifest or shipping paper.

Unit	Review Frequency
Landfill	Annual (all streams)
Waste Water Treatment Plant Influent	Every two years (on-site Dow streams) Annual for off-site or non-Dow streams
Tertiary Treatment Pond Influent	Annual (all streams)
Incineration	Every three years (on-site Dow streams) Annual for off-site or non-Dow streams

**A(1)(c) Additional Waste Analysis Requirements**  
{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(b)(6) and 40 CFR 264.13(c)(3) which are ABR in R 299.11003}

Dow's Michigan Operations will ensure that qualified personnel review the waste profile information to ensure that the facility is authorized to receive the waste, and can manage the waste in compliance with the following:

- R 299.9605 and 40 CFR 264.17      General requirements for ignitable, reactive, or incompatible wastes (not accepted at Salzburg Landfill, unless the waste meets treatment standards)  
[See the appropriate Preventative Procedures section]
- R 299.9631 and 40 CFR 264.1063(d)      Test methods and procedures (Subpart BB)
- 40 CFR 264.1083      Waste determination procedures (Subpart CC)
- R 299.9627 and 40 CFR 268.7      Waste analysis and record keeping (LDR) requirements  
[See Waste Analysis Plan, Appendix II.C-2]
- R 299.9503 (1) (h) and 40 CFR 264.13 (c) (3)      Procedures to verify that no addition of biodegradable sorbents in containers destined to be landfilled has occurred.

**A(2)      Waste Acceptance Procedures**

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(c), 264.72(a) and (b), and 264.73(b) which are ABR in R 299.11003}

Waste shipments arrive at the facilities in the following containers:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Drums          | <input checked="" type="checkbox"/> Portable tanks (dinos, dempsters)* |
| <input checked="" type="checkbox"/> Totes*         | <input checked="" type="checkbox"/> Dump trucks                        |
| <input checked="" type="checkbox"/> Roll-off boxes | <input checked="" type="checkbox"/> Vacuum trucks                      |
| <input checked="" type="checkbox"/> Tanker trucks* | <input checked="" type="checkbox"/> Railroad cars*                     |
| <input checked="" type="checkbox"/> Lab packs*     | <input checked="" type="checkbox"/> Gas cylinders*                     |

\*Salzburg Landfill does not accept waste in/ from these containers, since these typically contain liquid or contained-gas wastes. However, in the rare event that a container itself is deemed a waste, that container may be placed into Salzburg Landfill subject to applicable regulations and license requirements.

Upon receipt of wastes from an off-site or non-Dow generator, Dow's Michigan Operations will ensure qualified personnel will perform all of the following tasks:

- Review paperwork
- Visually inspect the waste
- Perform waste screening/fingerprint analysis of waste

These tasks are discussed below.

**A(2)(a) Review Paperwork**

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(c), 264.72(a) and (b), and 264.73(b) which are ABR in R 299.11003}

Dow's Michigan Operations will ensure that qualified personnel review all paperwork, including manifests and LDR notifications, before any wastes are accepted by the facility. Dow's Michigan Operations will ensure qualified personnel will review all paperwork for completeness. In addition, the LDR notification and manifest will be compared for consistency. The manifest will also be compared to the waste profile and any analytical information that may be provided by the generator and to the waste shipment itself to ensure the accuracy of information provided on shipment paperwork. The manifest will also be compared to the number of containers, the volume, and/or the weight of the waste in the shipment. All discrepancies will be resolved before processing the waste.

**A(2)(b) Visual Inspection of the Waste**

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(c) which are ABR in R 299.11003}

Dow's Michigan Operations procedures ensure qualified personnel visually inspect containers from each generator for the condition of the containers and proper labeling (including bar codes for waste in packs). All discrepancies will be resolved before processing the waste.

**A(2)(c) Waste Screening/Fingerprinting**

{R 299.9605(1), R 299.9504(1)(c), and 40 CFR 264.13(b)(1-4) and 264.13(c)(2), which are ABR in R 299.11003}

For off-site or non-Dow approved wastes that can be mixed with wastes at the facility, quality acceptance testing may be appropriate. These may be physical or analytical tests such as pH, color, specific gravity, or visual appearance. The sampling method

will be an appropriate method described in 40 CFR 261, Appendix I which is ABR in R 299.11033. If deemed necessary, the specifics of such procedures are defined with the assistance of the generator prior to shipment. As with wastes generated on-site, these wastes will be evaluated for compatibility prior to being co-managed with other wastes.

In the event that sampling at the time of arrival indicates that the shipment is not the same as was previously characterized, then the waste is isolated and contained and the generator is contacted. The material will be re-characterized and re-approved prior to acceptance, or the shipment is rejected and returned to the generator. Waste accumulation periods for generators are managed within the requirements of 40 CFR 262.34.

During the waste characterization approval process, the qualified reviewer will evaluate waste that could go to the Landfill for non-biodegradable absorbents prior to final approval of the waste characterization. This would normally be the Environmental Management Unit approver. The generator will indicate on the GWCF, types of absorbent to be used for each waste. The following absorbents are approved for use on wastes disposed at Salzburg Landfill: Zorball®, sand, spun polypropylene, clay, vermiculite, and other non-biodegradable absorbents as defined in 40 CFR 264.314(d).

Salzburg Landfill does not accept wastes containing free liquids. Wastes will be visually screened for free liquids prior to landfilling.

**A(3) Procedures to Ensure Compliance with Land Disposal Restrictions (LDR) Requirements**  
{R299.9627 and 40 CFR Part 268 which is ABR in R 299.11003}

All shipments of wastes subject to LDR received at the facility will be accompanied by appropriate generator notification and LDR notification in accordance with R 299.9627 and 40 CFR 268.7 which is ABR in R 299.11003. The LDR notification accompanying generator wastes will be reviewed, and any discrepancies in the LDR notification and the associated manifest, analytical records, or waste profile sheet will require shipment rejection unless additional satisfactory clarifying information is provided by the generator. All information obtained to document LDR compliance will be maintained in the facility operating record until closure of the facility.

In accordance with the LDR regulations, all wastes shipped off site will be analyzed, or generator knowledge will be used, when appropriate, to determine whether the waste meets the applicable LDR treatment standards specified in R 299.9627 and 40 CFR 268.41-43 which are ABR in R 299.11003. All analytical results will be maintained in the facility operating record until closure of the facility. Wastes that are determined through analysis to meet treatment standards as specified in R 299.9627 and 40 CFR 268.41-43 which are ABR in R 299.11003 will be landfilled.

Dow's Michigan Operations will supply LDR notifications and certification, including appropriate analytical records to support the certification, to the receiving facility with each off-site shipment of waste. The notifications and certifications will contain the information required under R 299.9627 and 40 CFR 268.7, which is ABR in R 299.11003. Any additional data obtained from the generators (e.g., waste profile sheets, original LDR notifications, analysis provided by generators) will be provided to the licensed TSDf where the waste will be sent.

Dow has obtained in the past and may obtain future variances from LDR requirements per 40 CFR 268.6. Where variances exist, disposal of the solids will meet the approved variance requirements.

**A(3)(a) Spent Solvent and Dioxin Wastes**  
{R 299.9627 and 40 CFR 264.13(a)(1), 268.7, 268.31, 268.40, 268.41, 268.42, and 268.43 which are ABR in R 299.11003}

Spent solvent wastes (F001-F005) are accepted at the facility. Generator process knowledge will be used to determine the presence of spent solvent wastes (F001-F005). Generator process knowledge will be documented on the GWCF and LDR notification. The LDR notification will provide additional information regarding the appropriate treatment standards for the waste and whether it has already been treated to the appropriate standards.

**A(3)(b) Listed Wastes**  
{R 299.9627, R 299.9213, and R299.9214, and 40 CFR 264.13(a)(1), 268.7, 268.39, 268.40, 268.41, 268.42, 268.43 which are ABR in R 299.11003}

Generator process knowledge will be used to determine whether listed waste meets the applicable treatment standards or demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R 299.9627 and 40 CFR 268.41, which ABR is in R 299.11003, where treatment standards are based on concentrations in the waste extract, the facility will use toxicity characteristic leaching procedures (TCLP) to determine if wastes meet treatment standards. Generator process knowledge will be documented on the GWCF and LDR notification.

**A(3)(c) Characteristic Wastes**  
{R 299.9627, R 299.9208, and R 299.9212 and 40 CFR 261.3(d)(1), 264.13(a)(1), 264.312, 268.7, 268.9, 268.34, 268.37, 268.40, 268.41, 268.42, 268.43 and Part 268 Appendix I, and Appendix IX which are ABR in R 299.11003}

Generator process knowledge will be used to determine whether characteristic wastes meet the applicable treatment standards or to demonstrate that the waste has been treated by the appropriate specified treatment technology. In accordance with R

299.9627 and 40 CFR 268.41 which is ABR in R 299.11003, where treatment standards are based on concentrations in the waste extract, generators shipping waste to the facility will determine if their wastes meet treatment standards.

If laboratory analysis is necessary, characteristic D008 lead non-wastewaters and D004 arsenic non-wastewaters will be analyzed using TCLP to determine compliance with treatment standards of 40 CFR 268.40 and 268.48. If after treatment a hazardous waste displays a characteristic for the first time, the characteristic waste code will be added to the LDR notification and facility records. Wastes will be re-treated, as appropriate, to meet the characteristic treatment standards of 40 CFR 268.40 and 268.48 prior to land disposal. In addition, generator process knowledge will be used to identify the underlying hazardous constituents that are expected to be present in the waste. Generator process knowledge will be documented on the GWCF and LDR notification.

**A(3)(d) Radioactive Mixed Waste**

{R 299.9627 and 40 CFR 268.7, 268.35(c), 268.36, and 268.42(d) which are ABR in R 299.11003}

Generator process knowledge will be used to determine whether a radioactive mixed waste meets the applicable treatment standard. Radioactive mixed waste is characterized using the same process as all other waste. Michigan Operations has a license from the Nuclear Regulatory Commission for treatment of the radioactive materials handled on the site.

\*Salzburg Landfill does not accept radioactive waste for disposal, but it does receive treatment residues from the Michigan Operations incineration complex.

**A(3)(e) Leachates**

{R 299.9627 and 40 CFR 260.10 and 40 CFR 268.35(a) and 268.40 which is ABR in R 299.11003}

Dow's Michigan Operations F039 multi-source leachate is treated in its waste water treatment plant. The secondary effluent from the waste water treatment plant is checked annually to confirm that it meets LDR treatment standards. Based on the F039 constituents in the wastes treated the prior year according to completed GWCFs, a selected list of constituents is monitored. A list of analytes for prior years is available upon request.

For example, in 2006, the following chemicals were tested under the F039 code. The list is merely an example and will change from year to year depending on the wastes treated during the previous calendar year.

Acenaphthylene	1,1-Dichloroethane	Methyl isobutyl ketone
Acenaphthene	1,2-Dichloroethane	Methyl methacrylate
Acetone	1,1-Dichloroethylene	Methyl methansulfonate
Acetonitrile	2,4-Dichlorophenol	Naphthalene
Acetophenone	2,6-Dichlorophenol	Nitrobenzene
Acrylonitrile	1,2-Dichloropropane	p-Nitrophenol
Aniline	Diethyl phthalate	Pentachlorobenzene
Anthracene	Dimethyl phthalate	Pentachlorophenol
Benzene	2,4-Dinitrotoluene	Phenol
Benz(a)anthracene	2,6-Dinitrotoluene	Phthalic anhydride
Benzo(b)fluoranthene	Di-n-octyl phthalate	Pyrene
Benzo(k)fluoranthene	1,4-Dioxane	Pyridine
Benzo(g,h,i)perylene	Diphenylnitrosamine	Silvex (2,4,5-TP)
Benzo(a)pyrene	Ethyl acetate	1,2,4,5-Tetrachlorobenzene
4-Bromophenyl phenyl ether	Ethyl benzene	Tetrachlorodibenzo-p-dioxins
n-Butyl alcohol	Ethyl ether	Tetrachlorodibenzofurans
Butyl benzyl phthalate	Ethylene oxide	1,1,1,2-Tetrachloroethane
2-sec-Butyl-4,6 dinitrophenol	Bis(2-ethylhexyl) phthalate	1,1,2,2-Tetrachloroethane
Carbon disulfide	Fluoranthene	Tetrachloroethylene
Carbon tetrachloride	Fluorene	2,3,4,6-Tetrachlorophenol
Chlorobenzene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	Toluene
2-Chloro-1,3-butadiene	1,2,3,4,6,7,8-Heptachlorodibenzo-p-furan	1,2,4-Trichlorobenzene
Chlorodibromomethane	1,2,3,4,7,8,9-Heptachlorodibenzo-p-furan	1,1,1-Trichloroethane
Chloroethane	Hexachlorobenzene	1,1,2-Trichloroethane
Bis (2-Chloroethoxy)methane	Hexachlorobutadiene	Trichloroethylene
2-Chloronaphthalene	Hexachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane
2-Chlorophenol	Hexachlorocyclopentadiene	2,4,5-Trichlorophenol
3-Chloropropylene	Hexachlorodibenzo-p-dioxins	2,4,6-Trichlorophenol
o-Cresol	Hexachlorodibenzo-furans	Vinyl chloride
m-Cresol	Hexachloroethane	Xylene(s)
Cyclohexanone	Hexachloroethane	Antimony
1,2-Dibromoethane	Indeno (1,2,3-c,d) pyrene	Arsenic
Dibromomethane	Iodomethane	Barium
2,4-Dichlorophenoxyacetic acid (2,4-D)	1,3-Isobenzofurandione	Beryllium
Dibenz(a,h)anthracene	Methacrylonitrile	Cadmium
m-Dichlorobenzene	Methylene chloride	Chromium
o-Dichlorobenzene	Methyl ethyl ketone	Lead
p-Dichlorobenzene		Nickel
		Mercury
		Selenium

**Silver**

**Zinc**

**A(3)(f) Laboratory Packs**  
{R 299.9627 and 40 CFR 268.7, 268.42(c), and Part 268 Appendix IV and Appendix V which are ABR in R 299.11003}

The laboratory packs accepted at the facility are not land disposed.

Laboratory packs are treated by incineration and the incinerator ash is tested annually to verify that it meets LDR treatment standards.

If a lab pack hazardous waste is combined with non-lab pack hazardous waste prior to or during treatment, the entire mixture will be treated to meet the most stringent treatment standards for each waste constituent before being land disposed.

**A(3)(g) Contaminated Debris**

{R 299.9627 and 40 CFR 268.2(g), 268.7, 268.9, 268.36, 268.45, and 270.13(n) which are ABR in R 299.11003}

The hazardous debris categories and the contaminant categories associated with the types of hazardous debris accepted at the facility are presented in Table A-3.

Hazardous debris accepted at the facility that exhibits the characteristics of ignitability, corrosivity, or reactivity will be treated using one of the extraction, destruction, or immobilization technologies identified in Table 1 of 40 CFR 268.45.

**A(3)(h) Waste Mixtures and Wastes with Overlapping Requirements**

{R 299.9627 and 40 CFR 264.13(a), 268.7, 268.41, 268.43, and 268.45(a) which are ABR in R 299.11003}

Generator process information and analytical data will be used to demonstrate that those waste mixtures and wastes with multiple codes are properly characterized. Each waste that has more than one characteristic will be identified with a number for each characteristic. Waste identified as meeting a listing and exhibiting a characteristic will be primarily identified with the listed waste code for the purpose of manifesting, etc. Wastes that carry more than one characteristic or listed waste code are treated by the appropriate treatment standard for each waste code as required by 40 CFR 268.

**A(3)(i) Dilution and Aggregation of Wastes**

Listed wastes, if destined for land disposal, may not be diluted from the point of generation to the point of land disposal. Characteristic wastes may only be diluted if (1) the waste is managed in a Clean Water Act (CWA)/CWA-equivalent surface unit, (2) the waste has a concentration-based treatment standard or is treated using the deactivation (DEACT) technology-based treatment standard, and (3) the waste is not a

D003 reactive waste. The facility may not dilute or partially treat a listed waste to change its treatability category (i.e., from non-wastewater to wastewater), in order to comply with different treatment standards. If the wastes are all legitimately amenable to the same type of treatment to be performed, the facility may aggregate wastes for treatment.

**A(4) Comparable Fuels and other high-Btu waste streams**

{R 299.9230, 40 CFR 261.4(a)(16) and 40 CFR 261.38}

In ongoing efforts to reduce the natural gas consumption of Dow's 32 Incinerator, the facility may receive streams that qualify for the Comparable Fuels exclusion from regulation as hazardous waste pursuant to the provisions contained in R 299.9230 (40 CFR 261.4(a)(16) and the Permit to Install No. 281-07, approved on April 16, 2008.

Documentation required under 40 CFR 261.38 supporting any comparable fuel incinerated under this section will be maintained by Dow as part of the operating record.

Additionally, the facility may receive other off-site non-Dow waste streams with the following Btu content: liquid wastes greater than 5,000 Btu/pound, or gaseous wastes greater than 100 Btu per standard cubic foot.

**TABLE A-3**  
**CONTAMINATED DEBRIS CATEGORIES**

<b>Hazardous Debris Category</b>	<b>Contaminant Category</b>
Glass: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Metal: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Plastic: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Rubber: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Brick: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Cloth: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Concrete: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Paper: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Asphalt: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Rock: Yes	Toxicity characteristic waste, or debris contaminated with listed waste
Wood: Yes	Toxicity characteristic waste, or debris contaminated with listed waste

The waste characterization process used for all other waste will be used to characterize the hazardous debris managed at the facility. These procedures ensure hazardous debris is treated in accordance with treatment standards specified in R 299.9627 and 40 CFR 268.45 which is ABR in R 299.11003, or to meet the existing treatment standards for each waste constituent specified in R 299.9627 and 40 CFR 268.41 and 268.43 which are ABR in R 299.11003 (except wastes with a specified

**treatment technology listed in R 299.9627 and 40 CFR 268.42 which is ABR in R 299.11003, which must be treated as required in R 299.9627 and 40 CFR 268.42 which is ABR in R 299.11003).**

**B. NOTIFICATION, CERTIFICATION, AND RECORDKEEPING REQUIREMENTS**  
{R 299.9627 and R 299.9609 and 40 CFR 264.73, 268.7, 268.9(d) which are ABR in R 299.11003}

Appendix II.C-2 to the WAP describes Dow's Michigan Operations' procedures for preparing and/or maintaining applicable notifications and certifications to comply with LDRs.

**B(1) Retention of Generator Notices and Certifications**  
{R 299.9627 and 40 CFR 268.7(a)(7) which is ABR in R 299.11003}

Dow's Michigan Operations will retain a copy of all notices, certifications, demonstrations, data, and other documentation associated with compliance to LDRs in the operating record until closure of the facility.

The following notices and certifications submitted by the initial generator of the waste will be reviewed and maintained:

- Notices of restricted wastes not meeting treatment standards or exceeding levels specified in RCRA Section 3004(d), including the information listed in R 299.9627 and 40 CFR 268.7(a)(1), which is ABR in R 299.11003.
- Certifications of restricted wastes meeting applicable treatment standards and prohibition levels, including the information in R 299.9627 and 40 CFR 268.7(a)(2), which is ABR in R 299.11003.

**B(2) Notification and Certification Requirements for Treatment Facilities**  
{R 299.9627 and 40 CFR 268.7(b) which is ABR in R 299.11003}

The treatment facility will submit a one-time notice and certification to the land disposal facility with each shipment of restricted waste or treatment residue of a restricted waste as specified in 40 CFR 268.7(b)(3). The notice will include the information specified in R 299.9627, 40 CFR 268.7(b)(4) and 268.7(b)(5), that is ABR in R 299.11003.

If the waste or treatment residue will be further managed at a different treatment or storage facility, the facility will comply with the notice and certification requirements applicable to generators as specified in R 299.9627 and 40 CFR 268.7(b)(6), which is ABR in R 299.11003.

**B(3) Waste Shipped to Subtitle C Facilities**  
{R 299.9627 and 40 CFR 268.7(a) and 268.7(b)(5) which are ABR in R 299.11003}

- For restricted waste or waste treatment residues that will be further managed at a Subtitle C (hazardous waste management) facility, the facility will submit

notifications and certifications in compliance with the requirements applicable to generators under R 299.9627 and 40 CFR 268.7(a), which is ABR in R 299.11003. Each shipment of waste to be transported off site to a RCRA-authorized Subtitle C TSD facility will include a written notification and certification that the waste either meets or does not meet applicable treatment standards of prohibition levels.

**B(5) Waste Shipped to Subtitle D Facilities**  
{R 299.9627 and 40 CFR 268.7(d) and 268.9(d) which are ABR in 299.11003}

- If the facility ships hazardous debris or characteristic waste to a Subtitle D facility, the facility will submit a one-time notification and certification for characteristic wastes (or listed wastes that are listed only because they exhibit a characteristic) that have been treated to remove the hazardous characteristic and are no longer considered hazardous. The facility will place a certification and all treatment records in the facility's file and send a notification and certification to the Director (or delegated representative) describing the wastes and applicable treatment standards and identifying the Subtitle D (solid waste management) disposal facility receiving the waste. On an annual basis, the notification and certification will be updated if the process or operation generating the waste changes and/or if the Subtitle D facility receiving the waste changes.

**B(6) Recyclable Materials**  
{R 299.9627 and 40 CFR 268.7(b)(6) which is ABR in 299.11003}

- The facility does not accept recyclable materials used in a manner constituting disposal.

**B(7) Recordkeeping**  
{R 299.9608(4), R 299.9609, R 299.9610(3), and R 299.9627 and 40 CFR 264.72, 264.73, 268.7(a)(5), 268.7(a)(6), 268(a)(7), and 268.7(d) which are ABR in R 299.11003}

Dow's Michigan Operations maintains a facility operating log in accordance with R 299.9609 and 40 CFR 264.73.

Copies of all necessary notifications and certifications as well as relevant inspection forms and monitoring data are also maintained on file at the facility. Files will be maintained for a minimum of three (3) years (for inspection records and LDR notification), or until facility closure (for inventory records).

If a significant manifest discrepancy is discovered (such as variation in one piece count or misrepresentation of the type of waste such as corrosive rather than flammable) that cannot be resolved with the generator or transporter within 15 days of receipt, facility personnel will submit to the Director and regional administrator a letter describing the

**discrepancy and all attempts to reconcile the discrepancy. The letter will include a copy of the discrepant manifest or shipping document.**

**In the event that the facility manages a prohibited waste that is excluded from the definition of a hazardous or solid waste or that is exempt from Subtitle C regulations under 40 CFR 261.2 through 261.6 subsequent to the point of generation (including deactivated characteristic hazardous wastes managed in wastewater treatment systems subject to the Clean Water Act as specified at 40 CFR 261.4(a)(2) or that are CWA-equivalent), the facility will place a one-time notice in the facility files describing the generation, basis for exclusion or exemption, and disposal of the waste. For each shipment of treated debris, the facility will place a certification of compliance with applicable treatment standards in the facility's files.**

**WASTE ANALYSIS PLAN - APPENDIX II.C-1**  
**QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES**

### Quality Assurance/Quality Control Procedures

Analyses performed will follow Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (SW-846) or equivalent methods. The most recent approved version of SW-846 will be used when applicable. The appropriate quality assurance/quality control procedures as specified in the SW-846 methods will be followed. The quality assurance process is designed to insure that the information and data is technically sound, statistically valid, and properly documented. The quality assurance process provides the highest quality data possible or needed, within the constraints of the existing methods, sample matrix, and informational needs. The amount of quality assurance review that is needed may vary depending on the complexity of analyses required for the waste management method or regulatory program.

The quality control procedures are used to estimate and evaluate the reliability of the analytical data and to determine the necessity or the effect of corrective action on sampling, storage, shipping and analytical procedures. Inaccuracies can result from many causes, including unanticipated matrix effects, equipment malfunctions, and operator error. These factors are minimized through the use of quality control procedures by means of precision, accuracy, method detection limit studies, recovery determination, and other quantifiable and qualitative indicators.

For a more detailed description of the Quality Assurance Program (QAP) refer to the Dow Chemical Michigan Operations License Reapplication (Appendix C of the Sampling and Analysis Plan which is Appendix E of Section V, Environmental Monitoring) or the Salzburg Landfill license application (Section V, Appendix A, Attachment C).

**WASTE ANALYSIS PLAN - APPENDIX II.C-2**  
**LAND DISPOSAL RESTRICTIONS**

## **Land Disposal Restrictions**

### **R 299.9627, 40 CFR 270.14(b)(3), 40 CFR 268.7(b)**

The purpose of this section is to define how the regulated facilities at Dow's Michigan Operations will comply with the requirements of R 299.9627 [40 CFR 268].

#### **Generators**

All generators (both on-site and off-site) must submit a completed Generator's Waste Characterization Form (GWCF) to the appropriate Environmental Operations personnel for approval before any waste will be accepted for treatment, storage, or disposal at any of the regulated units covered by this reapplication. This submittal and the approval procedure are explained in Section II. B—Chemical and Physical Analyses, of this reapplication. The GWCF incorporates the Land Disposal Restriction (LDR) notifications and certification as required by R 299.9627 [40 CFR 268.7] for generators submitting wastes for treatment, storage, or disposal. Therefore, it is assured that all generators will submit the required LDR paperwork.

The generator submits the appropriate LDR documentation as part of the GWCF for the waste stream to be treated, stored, or disposed in the regulated units. The LDR notifications and any required certifications are maintained in the operating log of the owner/operator of the unit until closure of the unit as required by R 299.9609 [40 CFR 264.73(b)(11-14)].

For off-site shipments, a copy of the LDR notification and any required certification must accompany the first shipment of waste to the treatment, storage, or disposal facility. The associated manifest number must be included on the LDR with the first shipment of waste to the regulated unit.

#### **Annual LDR Certification Sampling and Analysis**

The sampling and analysis program is coordinated between the Incinerator, the ash dewatering-staging area, and the WWTP personnel. The program involves a certification burn in which representative wastes managed by the units are burned during a single campaign to generate residues for analyses. Scrubber water is not analyzed directly for LDR constituents because it is sent to the WWTP for treatment, not to land disposal. The importance of scrubber water as a waste stream is that, due to the derived-from rule, it contributes many of the hazardous waste codes for which the WWTP certifies in their secondary effluent.

## **Selection of Wastes for Annual Certification Burn**

Waste codes associated with waste streams incinerated in excess of 250,000 pounds during the previous calendar year are codes that are burned for the LDR Certification Burn. The quantity of 250,000 pounds was determined from the historical EPA HSWA permit of October 1988. In the past, for purposes of the LDR program, the year was based on the date of issuance of the historical HSWA permit for the facility. The year is currently based on a calendar year.

## **Sampling Techniques and Locations**

### **Incinerator Ash**

The primary sampling location for Incinerator ash is in the ash dewatering-staging area (33 Building). A representative sample of ash is collected. The methods referenced in R 299.9212(7) [40 CFR 261 Appendix I] are used when applicable.

### **Secondary Effluent**

Sampling times for secondary effluent are based on retention time through the WWTP. This retention time will vary based on hydraulic load at the time that the certification program is conducted. After the specified retention time has elapsed to allow for scrubber water from the Incineration Complex to be passing through the system, samples of secondary effluent are taken on a periodic basis (typically once per hour) for the period of time corresponding to the duration of the certification burn. These samples are composited to form one sample for analysis.

## **Determination of Target Analyte List for Certification**

The target compounds for analysis are determined from waste stream data. The target compounds are specified in R 299.9311 [40 CFR 268 Subpart D]. These analytes may include total content and Toxicity Characteristics Leaching Procedure (TCLP) analysis for volatile, semi-volatiles, inorganics, and metals.

## **Analysis**

Samples will be analyzed by the Dow Environmental Analysis Research Laboratory and Analytical Sciences Laboratories. In some cases, the services of an outside laboratory will be engaged. All analyses performed will follow SW-846 methods or equivalent.

## **Interpretation of Land Disposal Restrictions Sample Results**

Results of the sample analyses will be evaluated against the published treatment standards to demonstrate compliance. This procedure will compare the concentrations of constituents in the regulated waste streams to fixed treatment standards. This comparison will test a hypothesis that compares a mean to a fixed number using a t-test.

The concentrations of constituents in the regulated waste streams at the designated Points of Compliance will be compared to their treatment standards to determine if they are in compliance with the treatment standards. The comparison will use a Student's t-test at the 0.05 level of significance to determine if a statistically significant increase over the treatment standard limit has occurred.

Initially, one sample from each of the appropriate regulated waste streams will be taken and analyzed for the applicable constituents to be monitored from R 299.9311 [40 CFR 268]. If all of the constituents analyzed in all of the samples are below their respective treatment standards, then the treatment standard is not being exceeded and the sampling period is over. If, on the other hand, the concentration of a constituent in a sample is determined to be above the treatment standard, then that stream will be re-sampled four (4) consecutive times, generating four (4) different samples. These four (4) samples will each be analyzed for the constituent(s) which exceeded the treatment standard. This analysis will generate a total of five (5) analyses of the specific hazardous waste constituent(s) in the stream, and these five (5) analyses will be statistically compared to the treatment standard.

The five (5) analyses of the detected constituent will form a population of size  $n=5$ . From this population, the mean ( $\bar{X}$ ) and the standard deviation ( $s$ ) will be calculated as follows:

$$\bar{X} = 1/n \sum x_i$$
$$s = [1/(n-1) \sum (x_i - \bar{X})^2]^{1/2}$$

where:  $x_i$  = the individual measured concentrations of the specific constituent.

When a measured concentration is below the detection level, one-half of the detection level will be used as the value  $x_i$ . Though this can cause errors in the estimation of the standard deviation and the mean, these errors should be small because the treatment standards are all above the detection limits. The data will then be used to test the null hypothesis ( $H_0$ ) that "the concentration of the constituent in the waste stream is not greater than the treatment standard" versus the alternate hypothesis ( $H_1$ ) that "the

concentration of the constituent in the waste stream is greater than the treatment standard.”

The rejection region for the null hypothesis is set up as:

If  $x < (c_j + t^*s/n)$ : Do not reject  $H_0$

If  $x > (c_j + t^*s/n)$ : Reject  $H_0$  in favor of  $H_1$

Where  $c_j$  equals the treatment standard for hazardous waste constituent  $j$ , and  $t$  is the  $t$ -statistic with a 0.05 level of significance. For a sample size ( $n$ ) of 5, and therefore 4 degrees of freedom,  $t = 2.132$ .

For situations where additional samples are taken, or fewer samples need to be compared to the concentration limit due to currently unforeseen difficulties, a list of values for the  $t$ -statistic are included below.

**Land Disposal Restrictions**  
**t-Table for Proposed t-Test Alpha = 0.05**

<u>Degrees of Freedom<sup>1</sup></u>	<u>t Statistic</u>
1	6.314
2	2.920
3	2.353
4	2.132
5	2.015
6	1.943
7	1.895
8	1.860
9	1.833
10	1.812
11	1.796
12	1.782
13	1.771
14	1.761
15	1.753
16	1.746
17	1.740
18	1.734
19	1.729
20	1.725
21	1.721
22	1.717
23	1.714
24	1.711
25	1.708
30	1.697
40	1.684
60	1.671
120	1.658
Infinity	1.645

<sup>1</sup> For the statistical test proposed in Section XVI.B, the degrees of freedom equals the sample size minus one, or d.f. = n-1.

**FIGURE II.C-1**

**EXAMPLE GENERATOR'S WASTE CHARACTERIZATION FORM**

**FIGURE II.C-2 (Formerly 5-1)**

**LOGIC DIAGRAM FOR TREATMENT AND DISPOSAL OF HAZARDOUS WASTE**

## Dow Waste Characterization Form - Example

The Dow Waste Characterization Form consists of a series of subject matter forms. The subject matter forms are used and included only when they are applicable to a individual waste stream. Not all subject matter forms will be applicable for every waste stream. Dow utilizes an electronic system in order for generators to complete the GWCF. If information is not pertinent to a particular stream, then pages on the detailed GWCF are currently printed with blanks. In order to reduce the amount of blank paper printed needlessly, one improvement that has been applied to the GWCF is that the generator will be able to print the Profile Summary Report, which includes only the applicable information. A list of the subject matter form names and a brief overview of their content is given below.

Form Name	Included For:	Length	Signature ?
Submittal Form	All wastes	1 page	Yes
Profile Summary Report	All wastes	3-6 pages	No
LDR Forms listed below:	Hazardous wastes only		
<ul style="list-style-type: none"> <li>• LDR Off-site shipments</li> </ul>	Wastes sent to Dow from off-site	1 page	No
<ul style="list-style-type: none"> <li>• LDR Appendix IV Lab Pack Certification</li> </ul>	RCRA Hazardous Lab Packs only	1 page	Yes
<ul style="list-style-type: none"> <li>• LDR Notification</li> </ul>	RCRA Hazardous wastes	1-2 pages	Yes
<ul style="list-style-type: none"> <li>• LDR Certification</li> </ul>	RCRA Hazardous with land disposal	1 page	Yes
<ul style="list-style-type: none"> <li>• LDR Attachment 1</li> </ul>	RCRA Hazardous with RCRA F codes	1	No
<ul style="list-style-type: none"> <li>• LDR Attachment 2 (UHCs/UTS)</li> </ul>	RCRA Hazardous with RCRA D codes	10 pages	No

Examples of each form are included below.

**EXAMPLE OF SUBMITTAL FORM**

[<< Back to Home](#)

**THE DOW CHEMICAL COMPANY UNIVERSAL WASTE CHARACTERIZATION**

**\*\* Waste Profile Number: 132742-000**

**\*\* Tracking ID: 62213**

**A. GENERATOR INFORMATION**

- |                                  |                   |
|----------------------------------|-------------------|
| 1. Company Name:                 | b<br>. Phone:     |
| 2. Street Address:               |                   |
| 3. Generator EPA ID #:           |                   |
| 4. Contact Name:                 | b<br>. Dow ID # : |
| 5. Plant Site/Name/OPN:          |                   |
| 6. DOWFAS Account # (15 digits): |                   |

**B. GENERAL INFORMATION**

1. Waste Title (80 char):

**C. RECEIVER INFORMATION**

1. Proposed location that waste will be sent to (Enter 'New' in last column if this is not an update of an existing profile):

**GENERATOR/CONTACT PERSON CERTIFICATION  
(MUST be trained in RCRA management)**

I certify that, based on process knowledge, laboratory analysis, or my inquiry of those individuals immediately responsible for obtaining this information, the information on this form is true, accurate and complete, I am aware that significant penalties (including the possibility of fine and imprisonment) may be assessed for knowingly causing the improper classification and/or disposal of wastes.

Name(printed):		Master #:	
Title:	Bldg # :	Telephone # :	
Signature(original):			Date:

**EXAMPLE OF PROFILE SUMMARY REPORT**

[<< Back to Home](#)

**THE DOW CHEMICAL COMPANY WASTE CHARACTERIZATION Summary**

\*\* Waste Profile Number: Example WPN

\*\* Tracking ID:

**A. GENERATOR INFORMATION**

- 1. a. Contact Name: b. Dow ID #
- c. Contact Building d. Telephone e. Fax #:
- #: #:
- 2. Waste is from a. Plant Site/Name/OPN:
- b. Control Rm. Telephone #: c. Waste pick-up location:
- 3. DOWFAS Account # (15 digits) 4. Need Date:

**B. GENERAL INFORMATION**

- 1. Waste Title (80 char):
- 2. US DOT Waste Description
- 3. a. Waste Source
- 4. a. Anticipated frequency b. Expected generation rate
- c. Quantity currently in inventory d. Storage capacity:

**5. Container Information**

Category	Type of Container	Material of Construction of Container	Capacity of Container

**6. Primary Determination Method**

Process Knowledge:

**C. RECEIVER INFORMATION**

Site	EMU Description	Package Type	Max. Apprv. Wt.	Unload Desig.	Recharge Category	Prim.

**D. WASTE COMPOSITION**

Composition Type: ORIGINAL INPUT BY USER						
Component Name	CAS Number	DR Number	Concentration Range with units (% WT, PPM, etc)	Aver. Conc.	Additive	Detrm. Meth.
			to			
			to			
			to			
<b>TOTAL:</b>				100 +/- 0.5%		

Composition Type: THEORETICAL COMPOSITION AFTER BREAKDOWN						
Component Name	CAS Number	DR Number	Concentration Range with units (% WT, PPM, etc)	Aver. Conc.	Additive	Detrm. Meth.
			to			
			to			
			to			
<b>TOTAL:</b>				100 +/- 0.5%%		

**E. PHYSICAL CHARACTERISTICS**

1. Physical state of waste as generated:
  
2. Physical state of waste as shipped:
  
3. **Specific properties.** DM = Determination Method (i.e. Analytical, Process Knowledge, Best Engineering Judgement, Calculated). Only the properties applicable to a given waste stream will be completed.

Property	Avg.	Unit	Calc. Avg.	Unit	Text Value/Cmnt	DM
1,2-DICHLOROETHANE						
2-PROPENEAMINE						
2-PROPENEAMINE POLYMERS						
ALUMINUM NITRIDE						
ANTIMONY CONTENT						

ARSENIC CONTENT						
ASH						
BERYLLIUM CONTENT						
BIS CHLOROMETHYL ETHER						
BROMINE CONTENT						
CADMIUM CONTENT						
CARBON CONTENT						
CHLORINE CONTENT						
CHROMIUM CONTENT						
CHROMIUM VI CONTENT						
COBALT CONTENT						
COPPER CONTENT						
DENSITY						
ETHANOL						
FLASHPOINT						
FLUORINE CONTENT						
HEAT OF COMBUSTION						
HYDRAZINE						
HYDROGEN CONTENT						
IODINE CONTENT						
LEAD CONTENT						
LITHIUM CONTENT						
MANGANESE CONTENT						
MERCURY CONTENT						
METHANOL						
MOLES OF H+						
NICKEL CONTENT						
NITROGEN CONTENT						
OXYGEN CONTENT						
PCB						
PH						
PHOSPHOROUS						

CONTENT						
PLATINUM CONTENT						
POTASSIUM CONTENT						
QUINOLINE						
SILVER CONTENT						
SODIUM CONTENT						
SULFUR CONTENT						
SULFURIC ACID CONTENT						
TETRACHLOROSILANE						
THALLIUM CONTENT						
TOLUENE						
TOTAL DISSOLVED SOLIDS						
TOTAL ORGANIC CARBON						
VINYL CHLORIDE						
ZINC CONTENT						

**4. Reactive Chemical Properties**

**Handling Indicators:**

**Explanations:**

**5. Safety and Exposure Hazard**

**Explanations:**

Applicable safety and exposure hazards would appear here.

**Handling**

<b>Type</b>	<b>PPE</b> to wear in normal handling situations will be listed here (i.e. monogoggles, gloves, etc)

**Spill**

<b>Type</b>	<b>PPE</b> to wear in spill situations will be listed here (i.e. monogoggles, gloves, etc)

<b>Stream Code:</b> 62213	<b>Profile Number:</b> 132742-000
---------------------------	-----------------------------------


**Cartridge Type:**

**Others:**

**Absorbents - USE:**

**Additional absorbents to USE:**

**Absorbents - AVOID:**

**Additional absorbents to AVOID:**

**How is the waste handled at the manufacturing plant? List any special precautions or procedures:**

**Other precautions:**

7. **Have there been any known problems with treating this waste in the past?**

**Reference Codes**

**Profile** (if no codes listed, none apply)

Refr. Code Type	Refr. Code	Description	Confirmed
EPA SOURCE CODES	G Code		

**Substance** (If no RCRA Codes appear below then the waste is not RCRA Hazardous; If blank, no codes apply) The codes shown below are examples of the type of codes that would appear in this section.

Refr. Code Type	Refr. Code	Description	Confirmed
APPLICABLE REGULATIONS	RCRA HAZ		
APPLICABLE REGULATIONS	TSCA 5E		
MICHIGAN ACT 451 PART 121 REGULATED NON-HAZARDOUS WASTE	L Codes		
RCRA Hazard Waste Codes	D Codes		
RCRA Hazard Waste Codes	F Codes		
RCRA Hazard Waste Codes	U Codes		
RCRA Hazard Waste	P Codes		

<b>Stream Code:</b> 62213	<b>Profile Number:</b> 132742-000
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Codes			
RCRA Hazard Waste Codes	K Codes		

**Receiver** (If no codes listed, none apply)

Receiver	Refr. Code	Description	Confirmed

**Comments**

**Profile**

Comment Type	Comment

**Substance**

Comment Type	Comment

**EXAMPLE OF LDR OFF-SITE SHIPMENTS FORM**

**A. LDR OFF-SITE SHIPMENTS**

1. If the waste is to be transported to an off-site facility, complete the following generator information and send the applicable LDR Worksheet Sections and Attachments with the *initial* shipment of the waste  
 Name: \_\_\_\_\_ Phone \_\_\_\_\_  
 Company: \_\_\_\_\_ EPA ID # \_\_\_\_\_  
 Address: \_\_\_\_\_
  
2. The waste identified on the accompanying \_\_\_\_\_ (name of State) Hazardous Waste Manifest Number \_\_\_\_\_ :  does/  does not meet the applicable [LDR treatment standards](#).
  
3. The waste will be shipped to the following treatment, storage, or disposal unit or facility:
 

<input type="checkbox"/> Rotary Kiln	Dow Location	_____
<input type="checkbox"/> Permitted Storage	Dow Location	_____
<input type="checkbox"/> Landfill	Dow Location	_____
<input type="checkbox"/> Other Company		_____

**Facility Name** \_\_\_\_\_

**Location** \_\_\_\_\_

**Note:** Use the forms provided by the outside company for Waste Characterization and Land Disposal Restriction documentation rather than this LDR Worksheet unless the company does not have available forms.

**EXAMPLE OF LAB PACK CERTIFICATION FORM**

**THE DOW CHEMICAL COMPANY  
APPENDIX IV LAB PACK CERTIFICATION**

\*\* For help on using Lab Packs, see guidance from the [Main Form, Section D](#).

*Complete this form only if the pack contains waste having at least one RCRA Hazardous Waste Number*

Name: \_\_\_\_\_ Phone \_\_\_\_\_  
 Company: \_\_\_\_\_ [EPA ID #](#) \_\_\_\_\_  
 Address: \_\_\_\_\_  
 \_\_\_\_\_

The waste identified on the accompanying \_\_\_\_\_ (name of State) Hazardous Waste Manifest Number \_\_\_\_\_ (off-site shipments only) is an Appendix IV lab pack containing the following EPA Hazardous waste number(s) and will be incinerated at:

- Rotary Kiln** Dow Location \_\_\_\_\_
- Other Company** Name and Location \_\_\_\_\_  
 \_\_\_\_\_

This lab pack does not contain any constituents found in 40 CFR Part 268, [Appendix IV](#)

Chemical Name	<i>EPA Hazardous Waste Number</i>	Quantity & Units

The wastes do not meet the treatment standards specified in 268, Subpart D. The alternate lab pack treatment standards under 268.48(c) will be used. As required by 40 CFR 268.7, the following certification is made:

I certify under penalty of law that I personally have examined and am familiar with the waste and that the lab pack contains only wastes that have not been excluded under [Appendix IV](#) to 40 CFR Part 268 and that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at 40 CFR 268.49(c). I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

Authorized signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Printed or Typed Name: \_\_\_\_\_ Title: \_\_\_\_\_

**EXAMPLE OF LDR NOTIFICATION****C. LAND DISPOSAL RESTRICTION NOTIFICATION**

This waste is subject to Land disposal Restrictions under 40 CFR 268. Attach Waste Analysis, if available.

1. This waste  requires treatment to meet the LDR requirements. *Do not complete Section E.*  
 meets the treatment standards or has been treated by the [LDR specified technology](#). *(Complete Section E, LDR Certification, in addition to the other sections.)*
2. This waste meets the definition of a:  Wastewater  Non-wastewater.

*A wastewater is a waste that contains <1% by weight Total Suspended Solids AND <1% by weight Total Organic Carbon*

3. The information applicable to this waste is identified below. Check off at least one of the applicable boxes below. If you do not know which box(es) to check, consult the Approver.
- [a.](#)  The waste is not restricted because there is no land disposal (or land disposal of waste treatment residues, e.g., ash).
- [b.](#)  The waste is a F001-F005 spent solvent. Complete the LDR Attachment 1 to specify the applicable constituents.
- [c.](#)  The waste is F039 multi-source leachate. Complete the LDR Attachment 2 to specify the constituents present in the waste.<sup>a</sup>
- [d.](#)  The waste is an EPA listed hazardous waste (other than F001-F005, F039) as determined in Section A.4 of the RCRA Assessment Worksheet. Copy the EPA hazardous waste numbers to Section D of this LDR worksheet.
- [e.](#)  This is a RCRA hazardous wastewater that is treated in a elementary neutralization system, wastewater treatment system, is discharged through an NPDES outfall, and/or is sent to a Publicly Owned Treatment Works, which are all subject to the Clean Water Act. Subsequent to generation, the wastewater becomes exempt from further RCRA regulation because it is managed as specified at 40 CFR 261.4(a)(2). Copy the EPA hazardous waste numbers from Section A and B of the RCRA Assessment Worksheet to Section D of this LDR worksheet. [This is the One-time Notice to File Pursuant to 40 CFR 268.7(a)(7)].
- [f.](#)  The waste is characteristically hazardous (D001-D043) as determined in specified in Section B of the RCRA Assessment Worksheet. Copy the EPA hazardous waste numbers to Section D of this LDR worksheet. Complete the LDR Attachment 2 for the Underlying Hazardous Constituents present in the waste.<sup>a,b</sup> Specify any applicable Subcategories for these characteristic wastes in Section D of this LDR Worksheet. (Refer to [LDR Treatment Standards Table](#))
- [g.](#)  The waste is RCRA-hazardous debris that will be or has been treated via alternative treatment technologies. Copy the applicable EPA hazard codes (D,K,F,P,U) associated with the debris to Section D of the LDR worksheet. Attachments 1 and 2 do not need to be filled out. **Contact the Approver before checking this box.**
- [h.](#)  This waste is soil contaminated with RCRA-hazardous waste for which the Alternative LDR Treatment Standards for Soil of 40 CFR 268.49 (see [Soil Alternative Concentration Limits](#)) will be used. **Contact the Approver before checking this box.** If the Alternative LDR Treatment Standards for Soil are not going to be used, then treat the contaminated soil as any other RCRA-hazardous waste.

<sup>a</sup> LDR Attachment 2 is not required for Freeport on-site generators who send this waste to the B-33 Rotary Kiln Incinerator. For other situations where the waste will be monitored for all constituents, there is no need to specify them. Consult the Approver if you have questions.

<sup>b</sup> LDR Attachment 2 is not required for the following Subcategories:

- D001 ignitable wastes that are incinerated or recovered,
- D003 reactive cyanides or sulfides,
- D006 cadmium batteries,
- D008 lead acid batteries,
- D009 high mercury organic wastes, and
- D009 high mercury inorganic wastes.

**D. EPA HAZARDOUS WASTE NUMBER(S) AND SUBCATEGORY IDENTIFICATION**

Refer to the guidance document (use the hyperlink above) or [LDR Treatment Standards Table](#) for help in determining the applicable Subcategories.

EPA Hazardous Waste Number	Subcategory (if applicable)	EPA Hazardous Waste Number	Subcategory (if applicable)
<i>(RCRA codes appear here)</i>			

Authorized signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed or Typed Name: \_\_\_\_\_ Title: \_\_\_\_\_

**EXAMPLE OF LDR CERTIFICATION**

**E. LAND DISPOSAL RESTRICTION CERTIFICATION**

This section can only be completed if the waste meets the applicable LDR treatment standards or has been treated according to waste specific technology for the EPA Hazardous Waste Numbers listed in Section D (see [LDR Treatment Standards Table](#)), *and* is going directly to land disposal. **IF THE WASTE IS NOT GOING DIRECTLY TO LANDFILL, DO NOT COMPLETE THIS SECTION.** As required by 40 CFR 268.7, the following applicable certification(s) are made for this restricted waste:

1.	<input type="checkbox"/>	<p>Waste or contaminated soil which meets treatment standards without prior treatment:</p> <p>I certify under penalty of law that I have personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR 268 Subpart D. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.</p>
2.	<input type="checkbox"/>	<p>Waste which now meets treatment standards after treatment or has been treated by a specified technology (e.g., combustion, carbon adsorption, etc.):</p> <p>I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification. Based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the treatment standards specified in 40 CFR 268.40 without impermissible dilution of the prohibited waste. I am aware there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.</p>
3.	<input type="checkbox"/>	<p>The waste is debris and was treated by a technology listed in Table I of 40 CFR 268.45. List the Alternative Treatment Method used for treating the debris _____.</p> <p><b>Contact the Approver before checking this box.</b></p> <p>I certify under penalty of law that the debris has been treated in accordance with the requirements of 40 CFR 268.45. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.</p>
4.	<input type="checkbox"/>	<p>Wastes that are characteristic only (D001-D043) that have been decharacterized and are to be sent to a non-hazardous landfill. <b>Contact the Approver before checking this box.</b></p> <p>I certify under penalty of law that the waste has been treated in accordance with the requirements of 40 CFR 268.40 to remove the hazardous characteristic and that underlying hazardous constituents, as defined in 268.2(I) have been treated on-site to meet the Universal Treatment Standards. I am aware there are significant penalties for submitting false certification, including the possibility of fine and imprisonment.</p>

Authorized signature: \_\_\_\_\_ Date: \_\_\_\_\_  
 Printed or Typed Name: \_\_\_\_\_ Title: \_\_\_\_\_

## EXAMPLE OF LDR ATTACHMENT 1 – F LIST

## THE DOW CHEMICAL COMPANY

## LDR ATTACHMENT 1 (F-LIST)

(Mark all applicable EPA Hazardous Waste Numbers and Constituents of Concern)

EPA Hazardous Waste Number	Hazardous Waste Description	Constituents of Concern
<input type="checkbox"/> F001	Spent halogenated solvents used in degreasing and still bottoms from the recovery of these spent solvents and spent solvents mixtures.	<input type="checkbox"/> Carbon tetrachloride <input type="checkbox"/> Methylene chloride <input type="checkbox"/> Tetrachloroethylene <input type="checkbox"/> 1,1,1 -Trichloroethane <input type="checkbox"/> Trichloroethylene <input type="checkbox"/> 1,1,2-Trichloro-1,2,2-trifluoroethane <input type="checkbox"/> Trichlorofluoromethane
<input type="checkbox"/> F002	Spent halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	<input type="checkbox"/> Chlorobenzene <input type="checkbox"/> o-Dichlorobenzene <input type="checkbox"/> Methylene chloride <input type="checkbox"/> Tetrachloroethylene <input type="checkbox"/> 1,1,1 -Trichloroethane <input type="checkbox"/> 1,1,2-Trichloroethane <input type="checkbox"/> Trichloroethylene <input type="checkbox"/> 1,1,2-Trichloro-1,2,2-trifluoroethane <input type="checkbox"/> Trichlorofluoromethane
<input type="checkbox"/> F003 Subcategory	Spent non- Halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	<input type="checkbox"/> Acetone <input type="checkbox"/> n-Butyl alcohol <input type="checkbox"/> Cyclohexanone <input type="checkbox"/> Ethyl acetate <input type="checkbox"/> Ethyl benzene <input type="checkbox"/> Ethyl ether <input type="checkbox"/> Methanol <input type="checkbox"/> Methyl isobutyl ketone <input type="checkbox"/> Xylene
<input type="checkbox"/> F003 and /or F005 Subcategory	Spent non- halogenated solvents containing <b>only</b> one or more of the following: carbon disulfide, and cyclohexanone, and/or methanol	<input type="checkbox"/> Carbon disulfide <input type="checkbox"/> Cyclohexanone <input type="checkbox"/> Methanol
<input type="checkbox"/> F004	Spent non-halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	<input type="checkbox"/> Cresols (m and p isomers) <input type="checkbox"/> Nitrobenzene <input type="checkbox"/> o-Cresol <input type="checkbox"/> Cresol (mixed isomers)
<input type="checkbox"/> F005 Subcategory	Spent non- halogenated solvents and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	<input type="checkbox"/> Benzene <input type="checkbox"/> Carbon disulfide <input type="checkbox"/> 2-Ethoxyethanol <input type="checkbox"/> Isobutanol <input type="checkbox"/> Methyl ethyl ketone

		<input type="checkbox"/> 2-Nitropropane
		<input type="checkbox"/> Pyridine
		<input type="checkbox"/> Toluene
<input type="checkbox"/> F005 Subcategory	Spent non- halogenated solvents : 2-Nitropropane only	<input type="checkbox"/> 2-Nitropropane
<input type="checkbox"/> F005 Subcategory	Spent non- halogenated solvents : 2-Ethoxyethanol only	<input type="checkbox"/> 2-Ethoxyethanol

**EXAMPLE OF LDR ATTACHMENT 2 – UHCs / UTS**

**THE DOW CHEMICAL COMPANY**

**LDR ATTACHMENT 2 (Underlying Hazardous Constituents / Universal Treatment Standards)**

(Mark all applicable Constituents of Concern.)

Stream Code: 62213

Profile Number: 132742-000

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<b>I. Organic Constituents:</b>			
<input type="checkbox"/> Acenaphthene	83-32-9	0.059	3.4
<input type="checkbox"/> Acenaphthylene	208-96-8	0.059	3.4
<input type="checkbox"/> Acetone	67-64-1	0.28	160
<input type="checkbox"/> Acetonitrile	75-05-8	5.6	38
<input type="checkbox"/> Acetophenone	96-86-2	0.010	9.7
<input type="checkbox"/> 2-Acetylaminofluorene	53-96-3	0.059	140
<input type="checkbox"/> Acrolein	107-02-8	0.29	NA
<input type="checkbox"/> Acrylamide <sup>1</sup>	79-06-1	19	23
<input type="checkbox"/> Acrylonitrile	107-13-1	0.24	84
<input type="checkbox"/> Aldicarb sulfone <sup>1</sup>	1646-88-4	0.056	0.28
<input type="checkbox"/> Aldrin	309-00-2	0.021	0.066
<input type="checkbox"/> 4-Aminobiphenyl	92-67-1	0.13	NA
<input type="checkbox"/> Aniline	62-53-3	0.81	14
<input type="checkbox"/> o-Anisidine (2-methoxyaniline)	90-04-0	0.01	0.66
<input type="checkbox"/> Anthracene	120-12-7	0.059	3.4
<input type="checkbox"/> Aramite	140-57-8	0.36	NA
<input type="checkbox"/> Barban <sup>1</sup>	101-27-9	0.056	1.4
<input type="checkbox"/> Bendiocarb <sup>1</sup>	22781-23-3	0.056	1.4
<input type="checkbox"/> Benomyl <sup>1</sup>	17804-35-2	0.056	1.4

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> Benz(a)anthracene	56-55-3	0.059	3.4
<input type="checkbox"/> Benzal chloride <sup>1</sup>	98-87-3	0.055	6.0
<input type="checkbox"/> Benzene	71-43-2	0.14	10
<input type="checkbox"/> Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)	205-99-2	0.11	6.8
<input type="checkbox"/> Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)	207-08-9	0.11	6.8
<input type="checkbox"/> Benzo(g,h,i)perylene	191-24-2	0.0055	1.8
<input type="checkbox"/> Benzo(a)pyrene	50-32-8	0.061	3.4
<input type="checkbox"/> alpha-BHC	319-84-6	0.00014	0.066
<input type="checkbox"/> beta-BHC	319-85-7	0.00014	0.066
<input type="checkbox"/> delta-BHC	319-86-8	0.023	0.066
<input type="checkbox"/> gamma-BHC	58-89-9	0.0017	0.066
<input type="checkbox"/> Bromodichloromethane	75-27-4	0.35	15
<input type="checkbox"/> Methyl bromide (Bromomethane)	74-83-9	0.11	15
<input type="checkbox"/> 4-Bromophenyl phenyl ether	101-55-3	0.055	15
<input type="checkbox"/> n-Butyl alcohol	71-36-3	5.6	2.6
<input type="checkbox"/> Butyl benzyl phthalate	85-68-7	0.017	28
<input type="checkbox"/> Butylate <sup>1</sup>	2008-41-5	0.042	1.4

Stream Code: 62213

Profile Number: 132742-000

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> 2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	88-85-7	0.066	2.5
<input type="checkbox"/> Carbaryl <sup>1</sup>	63-25-2	0.006	0.14
<input type="checkbox"/> Carbenzadim <sup>1</sup>	10605-21-7	0.056	1.4
<input type="checkbox"/> Carbofuran <sup>1</sup>	1563-66-2	0.006	0.14
<input type="checkbox"/> Carbofuran phenol <sup>1</sup>	1563-38-8	0.056	1.4
<input type="checkbox"/> Carbon disulfide	75-15-0	3.8	4.8 mg/l TCLP
<input type="checkbox"/> Carbon tetrachloride	56-23-5	0.057	6.0
<input type="checkbox"/> Carbosulfan <sup>1</sup>	55285-14-8	0.028	1.4
<input type="checkbox"/> Chlordane (alpha and gamma isomers) <sup>1</sup>	57-74-9	0.0033	0.26
<input type="checkbox"/> p-Chloroaniline	106-47-8	0.46	16
<input type="checkbox"/> Chlorobenzene	108-90-7	0.057	6.0
<input type="checkbox"/> Chlorobenzilate	510-15-6	0.10	NA
<input type="checkbox"/> 2-Chloro-1,3-butadiene	126-99-8	0.057	0.28
<input type="checkbox"/> Chlorodibromomethane	124-48-1	0.057	15
<input type="checkbox"/> Chloroethane	75-00-3	0.27	6.0
<input type="checkbox"/> bis(2-Chloroethoxy)methane	111-91-1	0.036	7.2
<input type="checkbox"/> bis(2-Chloroethyl)ether	111-44-4	0.033	6.0
<input type="checkbox"/> 2-Chloroethyl vinyl ether <sup>1</sup>	110-75-8	0.062	NA

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> Chloroform	67-66-3	0.046	6.0
<input type="checkbox"/> bis(2-Chloroisopropyl)ether	39638-32-9	0.055	7.2
<input type="checkbox"/> p-Chloro-m-cresol	59-50-7	0.018	14
<input type="checkbox"/> Chloromethane (Methyl chloride)	74-87-3	0.19	30
<input type="checkbox"/> 2-Chloronaphthalene	91-58-7	0.055	5.6
<input type="checkbox"/> 2-Chlorophenol	95-57-8	0.044	5.7
<input type="checkbox"/> 3-Chloropropylene	107-05-1	0.036	30
<input type="checkbox"/> Chrysene	218-01-9	0.059	3.4
<input type="checkbox"/> p-Cresidine	120-71-8	0.01	0.66
<input type="checkbox"/> o-Cresol	95-48-7	0.11	5.6
<input type="checkbox"/> m-Cresol (difficult to distinguish from p-cresol)	108-39-4	0.77	5.6
<input type="checkbox"/> p-Cresol (difficult to distinguish from m-cresol)	106-44-5	0.77	5.6
<input type="checkbox"/> m-Cumenyl methylcarbamate <sup>1</sup>	64-00-6	0.056	1.4
<input type="checkbox"/> Cyclohexanone	108-94-1	0.36	0.75 mg/l TCLP
<input type="checkbox"/> o,p'-DDD	53-19-0	0.023	0.087
<input type="checkbox"/> p,p'-DDD	72-54-8	0.023	0.087
<input type="checkbox"/> o,p'-DDE	3424-82-6	0.031	0.087
<input type="checkbox"/> p,p'-DDE	72-55-9	0.031	0.087

Stream Code: 62213

Profile Number:

132742-000

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> o,p'-DDT	789-02-6	0.0039	0.087
<input type="checkbox"/> p,p'-DDT	50-29-3	0.0039	0.087
<input type="checkbox"/> Dibenz(a,h)anthracene	53-70-3	0.055	8.2
<input type="checkbox"/> Dibenz(a,e)pyrene	192-65-4	0.061	NA
<input type="checkbox"/> 1,2-Dibromo-3-chloropropane	96-12-8	0.11	15
<input type="checkbox"/> Ethylene dibromide (1,2-Dibromoethane)	106-93-4	0.028	15
<input type="checkbox"/> Dibromomethane	74-95-3	0.11	15
<input type="checkbox"/> m-Dichlorobenzene	541-73-1	0.036	6.0
<input type="checkbox"/> o-Dichlorobenzene	95-50-1	0.088	6.0
<input type="checkbox"/> p-Dichlorobenzene	106-46-7	0.090	6.0
<input type="checkbox"/> Dichlorodifluoromethane	75-71-8	0.23	7.2
<input type="checkbox"/> 1,1-Dichloroethane	75-34-3	0.059	6.0
<input type="checkbox"/> 1,2-Dichloroethane	107-06-2	0.21	6.0
<input type="checkbox"/> 1,1-Dichloroethylene	75-35-4	0.025	6.0
<input type="checkbox"/> trans-1,2-Dichloroethylene	156-60-5	0.054	30
<input type="checkbox"/> 2,4-Dichlorophenol	120-83-2	0.044	14
<input type="checkbox"/> 2,6-Dichlorophenol	87-65-0	0.044	14
<input type="checkbox"/> 2,4-D (2,4-Dichlorophenoxyacetic acid)	94-75-7	0.72	10

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> 1,2-Dichloropropane	78-87-5	0.85	18
<input type="checkbox"/> cis-1,3-Dichloropropylene	10061-01-5	0.036	18
<input type="checkbox"/> trans-1,3-Dichloropropylene	10061-02-6	0.036	18
<input type="checkbox"/> Dieldrin	60-57-1	0.017	0.13
<input type="checkbox"/> Diethyl phthalate	84-66-2	0.20	28
<input type="checkbox"/> 2,4-Dimethylaniline (2,4-xylydine)	95-68-1	0.01	0.66
<input type="checkbox"/> 2,4-Dimethyl phenol	105-67-9	0.036	14
<input type="checkbox"/> Dimethyl phthalate	131-11-3	0.047	28
<input type="checkbox"/> Di-n-butyl phthalate	84-74-2	0.057	28
<input type="checkbox"/> 1,4-Dinitrobenzene	100-25-4	0.32	2.3
<input type="checkbox"/> 4,6-Dinitro-o-cresol	534-52-1	0.28	160
<input type="checkbox"/> 2,4-Dinitrophenol	51-28-5	0.12	160
<input type="checkbox"/> 2,4-Dinitrotoluene	121-14-2	0.32	140
<input type="checkbox"/> 2,6-Dinitrotoluene	606-20-2	0.55	28
<input type="checkbox"/> Di-n-octyl phthalate	117-84-0	0.017	28
<input type="checkbox"/> p-Dimethylaminoazobenzene <sup>1</sup>	60-11-7	0.13	NA
<input type="checkbox"/> Di-n-propylnitrosamine	621-64-7	0.40	14
<input type="checkbox"/> 1,4-Dioxane	123-91-1	12.0	170

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> Diphenylamine (difficult to distinguish from diphenylnitrosamine)	122-39-4	0.92	13
<input type="checkbox"/> Diphenylnitrosamine (difficult to distinguish from diphenylamine)	86-30-6	0.92	13
<input type="checkbox"/> 1,2-Diphenylhydrazine	122-66-7	0.087	NA
<input type="checkbox"/> Disulfoton	298-04-4	0.017	6.2
<input type="checkbox"/> Dithiocarbamates (total) <sup>1</sup>	137-30-4	0.028	28
<input type="checkbox"/> Endosulfan I	939-98-8	0.023	0.066
<input type="checkbox"/> Endosulfan II	33213-65-9	0.029	0.13
<input type="checkbox"/> Endosulfan sulfate	1031-07-8	0.029	0.13
<input type="checkbox"/> Endrin	72-20-8	0.0028	0.13
<input type="checkbox"/> Endrin aldehyde	7421-93-4	0.025	0.13
<input type="checkbox"/> EPTC <sup>1</sup>	759-94-4	0.042	1.4
<input type="checkbox"/> Ethyl acetate	141-78-6	0.34	33
<input type="checkbox"/> Ethyl benzene	100-41-4	0.057	10
<input type="checkbox"/> Ethyl cyanide (Propanenitrile)	107-12-0	0.24	360
<input type="checkbox"/> Ethyl ether	60-29-7	0.12	160
<input type="checkbox"/> Ethyl methacrylate	97-63-2	0.14	160
<input type="checkbox"/> Ethylene oxide	75-21-8	0.12	NA
<input type="checkbox"/> bis(2-Ethylhexyl) phthalate	117-81-7	0.28	28

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> Famphur	52-85-7	0.017	15
<input type="checkbox"/> Fluoranthene	206-44-0	0.068	3.4
<input type="checkbox"/> Fluorene	86-73-7	0.059	3.4
<input type="checkbox"/> Formetanate hydrochloride <sup>1</sup>	23422-53-9	0.056	1.4
<input type="checkbox"/> Heptachlor	76-44-8	0.0012	0.066
<input type="checkbox"/> Heptachlor epoxide	1024-57-3	0.016	0.066
<input type="checkbox"/> 1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	35822-46-9	0.000035	0.0025
<input type="checkbox"/> 1,2,3,4,6,7,8-Heptachlorodibenzofuran (1,2,3,4,6,7,8-HpCDF)	67562-39-4	0.000035	0.0025
<input type="checkbox"/> 1,2,3,4,7,8,9-Heptachlorodibenzofuran (1,2,3,4,7,8,9-HpCDF)	55673-89-7	0.000035	0.0025
<input type="checkbox"/> Hexachlorobenzene	118-74-1	0.055	10
<input type="checkbox"/> Hexachlorobutadiene	87-68-3	0.055	5.6
<input type="checkbox"/> Hexachlorocyclopentadiene	77-47-4	0.057	2.4
<input type="checkbox"/> Hexachloroethane	67-72-1	0.055	30
<input type="checkbox"/> Hexachloropropylene	1888-71-7	0.035	30
<input type="checkbox"/> HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063	0.001

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> HxCDFs (All Hexachlorodibenzofurans)	NA	0.000063	0.001
<input type="checkbox"/> Indeno (1,2,3-c,d) pyrene	193-39-5	0.0055	3.4
<input type="checkbox"/> Iodomethane	74-88-4	0.19	65
<input type="checkbox"/> Isobutyl alcohol	78-83-1	5.6	170
<input type="checkbox"/> Isodrin	465-73-6	0.021	0.066
<input type="checkbox"/> Isosafrole	120-58-1	0.081	2.6
<input type="checkbox"/> Kepone	143-50-8	0.0011	0.13
<input type="checkbox"/> Methacrylonitrile	126-98-7	0.24	84
<input type="checkbox"/> Methanol	67-56-1	5.6	0.75 mg/l TCLP
<input type="checkbox"/> Methapyrilene	91-80-5	0.081	1.5
<input type="checkbox"/> Methiocarb <sup>1</sup>	2032-65-7	0.056	1.4
<input type="checkbox"/> Methomyl <sup>1</sup>	16752-77-5	0.028	0.14
<input type="checkbox"/> Methoxychlor	72-43-5	0.25	0.18
<input type="checkbox"/> Methyl ethyl ketone	78-93-3	0.28	36
<input type="checkbox"/> Methyl isobutyl ketone	108-10-1	0.14	33
<input type="checkbox"/> Methyl methacrylate	80-62-6	0.14	160
<input type="checkbox"/> Methyl methanesulfonate	66-27-3	0.018	NA
<input type="checkbox"/> Methyl parathion	298-00-0	0.014	4.6
<input type="checkbox"/> 3-Methylcholanthrene	56-49-5	0.0055	15

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> 4,4-Methylene bis(2-chloroaniline)	101-14-4	0.50	30
<input type="checkbox"/> Methylene chloride	75-09-2	0.089	30
<input type="checkbox"/> Metolcarb <sup>1</sup>	1129-41-5	0.056	1.4
<input type="checkbox"/> Mexacarbate <sup>1</sup>	315-18-4	0.056	1.4
<input type="checkbox"/> Molinate <sup>1</sup>	2212-67-1	0.003	1.4
<input type="checkbox"/> Naphthalene	91-20-3	0.059	5.6
<input type="checkbox"/> 2-Naphthylamine	91-59-8	0.52	NA
<input type="checkbox"/> o-Nitroaniline <sup>1</sup>	88-74-4	0.27	14
<input type="checkbox"/> p-Nitroaniline	100-01-6	0.028	28
<input type="checkbox"/> Nitrobenzene	98-95-3	0.068	14
<input type="checkbox"/> 5-Nitro-o-toluidine	99-55-8	0.32	28
<input type="checkbox"/> o-Nitrophenol <sup>1</sup>	88-75-5	0.028	13
<input type="checkbox"/> p-Nitrophenol	100-02-7	0.12	29
<input type="checkbox"/> N-Nitrosodiethylamine	55-18-5	0.40	28
<input type="checkbox"/> N-Nitrosodimethylamine	62-75-9	0.40	2.3
<input type="checkbox"/> N-Nitroso-di-n-butylamine	924-16-3	0.40	17
<input type="checkbox"/> N-Nitrosomethylethylamine	10595-95-6	0.40	2.3
<input type="checkbox"/> N-Nitrosomorpholine	59-89-2	0.40	2.3
<input type="checkbox"/> N-Nitrosopiperidine	100-75-4	0.013	35

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> N-Nitrosopyrrolidine	930-55-2	0.013	35
<input type="checkbox"/> 1,2,3,4,6,7,8,9-Octochlorodibenzo-p-dioxin (OCDD)	3268-87-9	0.000063	0.005
<input type="checkbox"/> 1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	39001-02-0	0.000063	0.005
<input type="checkbox"/> Oxamyl <sup>1</sup>	23135-22-0	0.056	0.28
<input type="checkbox"/> Parathion	56-38-2	0.014	4.6
<input type="checkbox"/> Total PCBs (sum of all PCB isomers, or all Aroclors)	1336-36-3	0.10	10
<input type="checkbox"/> Pebulate <sup>1</sup>	1114-71-2	0.042	1.4
<input type="checkbox"/> Pentachlorobenzene	608-93-5	0.055	10
<input type="checkbox"/> PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063	0.001
<input type="checkbox"/> PeCDFs (All Pentachlorodibenzofurans)	NA	0.000035	0.001
<input type="checkbox"/> Pentachloroethane <sup>1</sup>	76-01-7	0.055	6.0
<input type="checkbox"/> Pentachloronitrobenzene	82-68-8	0.055	4.8
<input type="checkbox"/> Pentachlorophenol	87-86-5	0.089	7.4
<input type="checkbox"/> Phenacetin	62-44-2	0.081	16
<input type="checkbox"/> Phenanthrene	85-01-8	0.059	5.6

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> Phenol	108-95-2	0.039	6.2
<input type="checkbox"/> 1,3-Phenylenediamine	108-45-2	0.01	0.66
<input type="checkbox"/> Phorate	298-02-2	0.021	4.6
<input type="checkbox"/> Phthalic acid <sup>1</sup>	100-21-0	0.055	28
<input type="checkbox"/> Phthalic anhydride	85-44-9	0.055	28
<input type="checkbox"/> Physostigmine <sup>1</sup>	57-47-6	0.056	1.4
<input type="checkbox"/> Physostigmine salicylate <sup>1</sup>	57-64-7	0.056	1.4
<input type="checkbox"/> Promecarb <sup>1</sup>	2631-37-0	0.056	1.4
<input type="checkbox"/> Pronamide	23950-58-5	0.093	1.5
<input type="checkbox"/> Propham <sup>1</sup>	122-42-9	0.056	1.4
<input type="checkbox"/> Propoxur <sup>1</sup>	114-26-1	0.056	1.4
<input type="checkbox"/> Prosulfocarb <sup>1</sup>	52888-80-9	0.042	1.4
<input type="checkbox"/> Pyrene	129-00-0	0.067	8.2
<input type="checkbox"/> Pyridine	110-86-1	0.014	16
<input type="checkbox"/> Safrole	94-59-7	0.081	22
<input type="checkbox"/> Silvex (2,4,5-TP)	93-72-1	0.72	7.9
<input type="checkbox"/> 1,2,4,5-Tetrachlorobenzene	95-94-3	0.055	14
<input type="checkbox"/> TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063	0.001

Stream Code: 62213	Profile Number: 132742-000
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Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> TCDFs (All Tetrachlorodibenzofurans)	NA	0.000063	0.001
<input type="checkbox"/> 1,1,1,2-Tetrachloroethane	630-20-6	0.057	6.0
<input type="checkbox"/> 1,1,2,2-Tetrachloroethane	79-34-6	0.057	6.0
<input type="checkbox"/> Tetrachloroethylene	127-18-4	0.056	6.0
<input type="checkbox"/> 2,3,4,6-Tetrachlorophenol	58-90-2	0.030	7.4
<input type="checkbox"/> Thiodicarb <sup>1</sup>	59669-26-0	0.019	1.4
<input type="checkbox"/> Thiophanate-methyl <sup>1</sup>	23564-05-8	0.056	1.4
<input type="checkbox"/> Toluene	108-88-3	0.080	10
<input type="checkbox"/> Toxaphene	8001-35-2	0.0095	2.6
<input type="checkbox"/> Triallate <sup>1</sup>	2303-17-5	0.042	1.4
<input type="checkbox"/> Tribromomethane/Bromoform	75-25-2	0.63	15
<input type="checkbox"/> 1,2,4-Trichlorobenzene	120-82-1	0.055	19
<input type="checkbox"/> 1,1,1-Trichloroethane	71-55-6	0.054	6.0
<input type="checkbox"/> 1,1,2-Trichloroethane	79-00-5	0.054	6.0
<input type="checkbox"/> Trichloroethylene	79-01-6	0.054	6.0
<input type="checkbox"/> Trichloromonofluoromethane	75-69-4	0.020	30
<input type="checkbox"/> 2,4,5-Trichlorophenol	95-95-4	0.18	7.4
<input type="checkbox"/> 2,4,6-Trichlorophenol	88-06-2	0.035	7.4

Regulated constituent--common name	CAS No.	Wastewater Standard in mg/L	Non-Wastewater Standard in mg/kg
<input type="checkbox"/> 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)	93-76-5	0.72	7.9
<input type="checkbox"/> 1,2,3-Trichloropropane	96-18-4	0.85	30
<input type="checkbox"/> 1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.057	30
<input type="checkbox"/> Triethylamine <sup>1</sup>	101-44-8	0.081	1.5
<input type="checkbox"/> tris-(2,3-Dibromopropyl)phosphate	126-72-7	0.11	0.10
<input type="checkbox"/> Vernolate <sup>1</sup>	1929-77-7	0.042	1.4
<input type="checkbox"/> Vinyl chloride	75-01-4	0.27	6.0
<input type="checkbox"/> Xylenes-mixed isomers (sum of o-,m-, and p-xylene concentrations)	1330-20-7	0.32	30

Please note on the last page of this attachment that there are two sets of UTS limits for metals.

- Column 4 is to be used for waste being disposed of in states that have not adopted the revised UTS metals limits.
- Column 5 can be used in states that have adopted these new metals standards. These states include Texas, Michigan, and Louisiana.

More information on the metals LDR limits is provided in <http://ehs.intranet.dow.com/rmec/GuidanceLinks/solidwaste.htm> - Regional

<b>II. Inorganic Constituents:</b>	<b>CAS Number</b>	<b>Wastewater Standard in mg/L</b>	<b>Non-Wastewater Standard for States that have not adopted LDR changes</b>	<b>Non-Wastewater Standard for States that have adopted LDR changes</b>
<input type="checkbox"/> Antimony	7440-36-0	1.9	2.1 mg/l TCLP	1.15 mg/l TCLP
<input type="checkbox"/> Arsenic	7440-38-2	1.4	5.0 mg/l TCLP	5.0 mg/l TCLP
<input type="checkbox"/> Barium	7440-39-3	1.2	7.6 mg/l TCLP	21 mg/l TCLP
<input type="checkbox"/> Beryllium	7440-41-7	0.82	0.014 mg/l TCLP	1.22 mg/l TCLP
<input type="checkbox"/> Cadmium	7440-43-9	0.69	0.11 mg/l TCLP	0.11 mg/l TCLP
<input type="checkbox"/> Chromium (Total)	7440-47-3	2.77	0.6 mg/l TCLP	0.6 mg/l TCLP
<input type="checkbox"/> Cyanides (Total)	57-12-5	1.2	590 mg/l	590 mg/l
<input type="checkbox"/> Cyanides (Amenable)	57-12-5	0.86	30mg/l	30 mg/l
<input type="checkbox"/> Fluoride <sup>2</sup>	16984-48-8	35	NA	NA
<input type="checkbox"/> Lead	7439-92-1	0.69	0.37 mg/l TCLP	0.75 mg/l TCLP
<input type="checkbox"/> Mercury--Nonwastewater from Retort <sup>1</sup>	7439-97-6	NA	0.20 mg/l TCLP	0.20 mg/l TCLP
<input type="checkbox"/> Mercury--All Others	7439-97-6	0.15	0.025 mg/l TCLP	0.025 mg/l TCLP
<input type="checkbox"/> Nickel	7440-02-0	3.98	5.0 mg/l TCLP	11 mg/l TCLP
<input type="checkbox"/> Selenium <sup>2</sup>	7782-49-2	0.82	0.16 mg/l TCLP	5.7 mg/l TCLP
<input type="checkbox"/> Silver	7440-22-4	0.43	0.14 mg/l TCLP	0.14 mg/l TCLP
<input type="checkbox"/> Sulfide <sup>2</sup>	8496-25-8	14	NA	NA
<input type="checkbox"/> Thallium	7440-28-0	1.4	0.078 mg/l TCLP	0.2 mg/l TCLP
<input type="checkbox"/> Vanadium <sup>2</sup>	7440-62-2	4.3	0.23 mg/l TCLP	1.6 mg/l TCLP
<input type="checkbox"/> Zinc <sup>3</sup>	7440-66-6	2.61	4.3 mg/l TCLP	4.3 mg/l TCLP

<sup>1</sup> Not applicable to F039 wastes

<sup>2</sup> Not an underlying hazardous constituent. Only applicable to F039 wastes

<sup>3</sup> Not an underlying hazardous constituent.