Transfer Facility SOP'S

Section #	Document	Revision Level	Effective Date
20.10.1	Sign In Procedure	3	Oct-10
20.10.2	Daily Plant Inspection Procedure	2	Oct-10
20.20.2	Paperwork Requirements Incoming Waste	3	Oct-10
20.20.4	Canadian Manifest Procedures (MEC)	4	Nov-10
20.20.5	Off Spec and Restricted Waste Procedures (MEC)	2	Oct-10
20.20.7	Paperwork Requirements for Waste Transfer (MEC)	3	Oct-10
20.30.2	Waste Verification and Sampling Procedure	5	Oct-10
20.30.3	Sampling Outbound Tanker Procedure	3	Oct-10
20.30.5	Drum Cleaning & Washing Procedure	2	Jun-11
20.40.1	Labpack Procedures (MEC)	2	Oct-10
20.50.1	Processing Facility VOC Emission Control Mgmt Procedure	1	Nov-10
20.50.2	Transfer Station Emission Control System Mgmt	1	Oct-10
20.50.3	TCH H2 Tank Change	1	Nov-10
20.50.4	Dry Scrubber Data Management Procedure	1	Oct-10
20.50.6	Notice Preparation for Trans-Border Shipments	2	Nov-10
20.51.1	MEC Evacuation Procedure	5	Oct-10
20.51.2	MEC Respiratory Procedure	1	Oct-10
20.60.1	Compactor/Baler Procedure	1	Oct-10
20.60.2	Changing Knife Blades on the CMP Plastic Shredder	1	Oct-10
20.60.3	Changing Knife Blades on the MARRC Plastic Shredder	1	Oct-10
20.70.1	Trailer Parking Procedure at MEC	2	Oct-10
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20.80.6	Inorganic Physical Chemical Treatment (Potassium Permanganate)	3	Oct-10
20.80.7	Empty Container Procedure (MEC)	2	Oct-10
20.80.8	Gravity Separation Treatment Procedure	2	Oct-10
20.80.9	Aerosol Processing Procedure	2	Oct-10
20.80.10	Drum Crusher/Compactor Procedure	2	Oct-10
20.80.12	Paint Can Crushe(s) Bulking Procedure	3	Oct-10
20.80.13	Fluorescent Bulb Processing	1	Oct-10
20.80.14	Batch Stabilization & Solidification Procedure	2	Oct-10
20.80.15	CMP - Empty Pesticide Plastic Container Processing Procedures	3	Oct-10
20.90.1	Analytical Method - Flash Point	1	Oct-10
20.90.3	Test Method for Total Water In Hazardous Waste by Karl Fischer Titrimetry	2	Oct-10
20.90.4	Ohaus Balance Procedure	1	Oct-10
20.90.5	Classification Procedure: Test Method & Criteria Relating to Oxidizing Solids Division 5.1	1	Oct-10
20.90.7	New Waste Testing & Develoment	1	Oct-10
20.100.1	Tote Management and Cleaning	3	Oct-10

Sign-in Procedure (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

All Miller Environmental Corporation (Miller) staff, visitors and contractors are required to sign in while on-site at the MEC. This is a requirement of the MEC Emergency Preparedness Plan.

2.0 SCOPE

This procedure applies to all Miller personnel, contractors and visitors who are on-site at the MEC.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

It is the responsibility of the operations manager, or his/her designate, to ensure that all personnel on-site at the MEC are included on the sign-in logbooks.

5.0 PROCEDURE

Sign-in logbooks are located in the dispatch and head office entrances. All employees, contractors and visitors of the MEC must follow the signage procedure outlined below:

1. Upon arrival, immediately report to the dispatch office or head office. Operations staff, laboratory staff, administration staff, and visitors should report to the head office. Sub-contractors and truckers should report to the dispatch office.

2. Fill in the applicable sign-in logbook ensuring that time of arrival is entered.

3. Prior to departure, return to your point of entry and sign out your time of departure in the logbook.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 Form EVL035 – Employee/Visitors Log

6.3 MEC Emergency Preparedness Plan

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager	IMS Coordinator

Daily Plant Inspection Procedure (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to describe and provide instruction to individuals performing the daily plant inspections at the MEC.

2.0 SCOPE

A daily plant inspection is required at the MEC. Form MDI065 (included as Attachment 7.1) is to be used to guide and record the inspections.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

It is the responsibility of the operations manager and operations supervisor to ensure that daily plant inspections occur and are recorded in the proper format according to this procedure.

5.0 PROCEDURE

The operations manager, supervisor or designate assigned the task of conducting the daily plant inspections are to use the “MEC Daily Inspection” form. The forms are kept in the dispatch office in a binder and prompt the person to check specific items at designated locations in and around the facility.

- The form must be dated and the time indicated.
- The person conducting the investigation must fill in their name on the form.
- All items listed on the form must be physically checked and the status of them indicated in the “check” column of the form.
- The “comments” section is provided to give more information about the state of disrepair or condition of the item being checked.
- Significant findings must be relayed to the operations manager in a timely manner.
- This form does not take the place of any required regulatory reporting such as for a reportable spill.
- Completed inspection forms are turned in to the dispatch coordinator for review.

- The dispatch coordinator will notify the operations supervisor and the operations manager by e-mail of any items requiring attention or repair.
- The supervisor and/or manager will discuss the item noted on the inspection and take appropriate steps to correct the problem.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

7.1 MDI065 MEC Daily Inspection

8.0 APPROVALS

Department Manager

IMS Coordinator

Paperwork Requirements for Incoming Waste (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to ensure that all paperwork pertaining to shipments being received at the MEC are verified for accuracy, completed, signed off and distributed properly.

2.0 SCOPE

This procedure applies to all paperwork that accompanies a shipment of waste or is generated at the MEC as a result of the waste being received.

3.0 DEFINITIONS

Skeleton Entry – Information that is entered into EnviroWare from the accompanying paperwork upon arrival of a load of waste. Typically occurs before the waste is physically unloaded and received by MEC technicians. The information includes numbers for drums, profiles, manifests, estimated volumes, and is required to print labels for receiving the load.

4.0 RESPONSIBILITIES

All Miller staff assigned to receive waste and process paperwork at the MEC is responsible for following this procedure.

5.0 PROCEDURE

5.1 MEC Dispatch Office Duties

1. Receive inbound paperwork from transporter's driver.
2. Ensure that driver has signed in (see 20.10.1 Sign-In Procedure (MEC)).
3. Update the board in the dispatch office with the trailer number, date of arrival, and the date the trailer must be unloaded by.
4. Pass all paperwork to the lab.

5.2 MEC Laboratory Duties

1. Confirm that manifest includes copies 3, 4, 5, and 6. Immediately notify MEC operations manager or supervisor if any paperwork (e.g. manifest) is missing.
2. Confirm that the manifest matches the tracking forms (DT027 & LPI028) included with each job. Immediately notify sales if discrepancies are found.
3. Update EnviroWare with the correct information for container number and size, manifests and profiles if not already done. Information is preliminary and used only to print the appropriate labels for receiving the load. Do not enter a receiving date at this stage (see SOP 27.20.3).
4. Use Report Smith to print labels (see SOP 27.20.4).
5. Separate the tracking forms from the sales packages, clip them together with the labels, and pass them through to the MEC technicians receiving the load. Keep manifest copies (3, 4, 5, and 6) and accompanying paperwork, such as sales orders, together in the lab.
6. MEC technicians sample, verify waste and complete drum tracking forms (see SOP 20.30.2).
7. Once the load has been physically received, the MEC technicians bring the completed tracking forms and accompanying samples to the lab.
8. The lab completes the verification of the waste and determines the appropriate treatment and disposal.
9. Put the completed tracking forms together with the rest of the paperwork (manifest, sales orders, etc.), and complete section C of manifest using the actual quantities of waste material received.
10. Update EnviroWare with the information from part C of the manifests including the actual container profiles, numbers, volumes, receive date, and save each job into inventory (see SOP 27.20.3)
11. Enter any Lab analysis (see SOP 27.90.1)
12. Pass the paperwork onto the accounting clerk.

5.3 Administrative Duties

1. Sort trailer package by sales order in numerical order.
2. Separate each sales order package into 2 piles, tracking and all else into a second pile. Then sort the second pile as follows: sales order, miscellaneous paperwork, bill of lading (s) and manifest (s).
3. Make a photocopy of all manifests and waste bill of ladings and attached to the second pile. Review each sales order packet for errors and/or missing information.
4. Put all original manifest (s) and bill of lading (s) aside. See Manifesting SOP 20.50.5.

5. Make a photocopy of all sales order packets. Attached the photocopies to the tracking and send to the sales department. Attach the originals to the tracking and file in current month folder.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007
6.2 20.10.1 Sign-In Procedures (MEC)
6.3 20.20.4 Canadian Manifest Procedure (MEC)
6.4 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.5 27.20.4 Printing Tracking Labels (MEC)
6.6 27.20.3 Receiving Waste (MEC)
6.7 27.90.1 Lab Analysis (MEC)
6.8 20.50.5 Manifest Distribution Procedure
6.9 Canadian Waste Manifest
6.10 DT027 – Drum Tracking Form
6.11 LPI028 – Labpack Inventory Form
6.12 SO171 – Sales Order

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Canadian Manifest Procedure (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to ensure that all personnel of Miller Environmental Corporation (Miller) understand the regulatory requirements that must be met when completing and receiving a manifest. It is also important to note that Provincial authorities may review manifests for accuracy and completeness. Penalties may be applied to Miller if manifests are found to be incorrect.

A Canadian waste manifest is required if more than 5 kilograms or litres is to be transported over a public road in Canada.

2.0 SCOPE

This procedure is applicable to all MEC staff who manages manifests on behalf of Miller.

3.0 DEFINITIONS

Consignor (Generator) - Refers to the company who is offering the waste for disposal.

Carrier (Transporter) - Refers to the company who is transporting the waste to the consignee (receiver).

Consignee (Receiver) - Refers to the company who is receiving the waste.

4.0 RESPONSIBILITIES

- It is the generator's responsibility to complete part A of the manifest. Miller generally undertakes this responsibility as a service to our customers. It is also the generator's responsibility to send copy #1 to the applicable government agency. Again, this is a service we usually perform for our customers.

- It is the carrier's responsibility to complete part B of the manifest.

- It is the consignee responsibility to complete part C of the manifest and mail the appropriate copies of the manifests to interested parties.

5.0 PROCEDURE

5.1 Part A – Generator's Responsibility

Ensure that the following information in part A, consignor (generator) is filled out completely, legibly and accurately (see attached manifest example). The reference letters below have been added to an attached copy of a waste manifest. (See attachment 7.1)

Box 1

- **Provincial ID No**. – We will **not** receive any waste from a location without this number being present on the manifest. If you come across such a circumstance, ask the operations manager for direction. Please note – Saskatchewan does not require that this be an assigned number. The date may be used according to the format – SAGyymmdd. A list of Manitoba Provincial ID No.'s can be found in the Hazardous Waste Generator Listing supplied by Manitoba Conservation.
- **Company Name** – This is the registered name of the company.
- **Mailing Address** – Address that the manifest is to be mailed to
- **Shipping site address** – This is the actual physical site that the waste is shipped from. A P.O. Box Number is not acceptable as a shipping site address.
- **City, Province, Postal Code** – Information that corresponds to the shipping site address.

Box 2

- **Intended Receiver/Consignee** – this is the company name that the shipment will be sent to.
- **Registration No./Provincial ID No.** – Provincial ID number that has been assigned to the intended consignee.
- **Address** – Mailing address of the consignee.
- **Receiving site address** – Actual physical address of the consignee.
- **City/Province/Postal code** – Use the physical site address

Box 3

- **Provincial Code** – This is the Provincial No. that has been assigned to certain waste streams. You are to use the Provincial No. of the province of the intended consignee, not necessarily the province of origin.

Box 4

- **Shipping name of waste** – Use the TDG proper shipping name for the waste that is being sent. The word "waste" must precede the name unless it is already included in the name. If N.O.S* appears in the name, you must put the material's chemical technical name(s) in brackets following the shipping name. **Note –** Any blank rows in the waste identification section should have a single line drawn through.

Box 5

- **Classification** – Using the TDGA/PIN of the waste stream, you can look up and use the corresponding classification for the specific waste**.**

Box 6

- **UN No.** – This is the unique universal Product Identification Number that has been assigned to dangerous goods. Note: the prefix UN must be included as part of the TDGA/PIN.

Box 7

- **Packaging Group** - Using the TDGA/PIN of the waste stream, you can look up the proper packing group for the specific waste. If multiple packing groups exist for a shipping name, then more information about the waste must be obtained. Packing groups should be determined prior to shipping the material.

Box 8

- **Quantity Shipped** – Estimated quantity or volume of material to be shipped. If you are shipping one drum, which equals 205 L, put 205 in this column. If is it two 20 L pails, put 40. For solids and gases, use your best judgement for weight.
- **Units** – Look at your physical state column and carry this across to this column. You will use either L or KG (If physical state is G for gas, use the KG as your unit).

Box 9

- **Packaging Contents No.** – This is the number of containers that you are picking up for the specific waste stream. If its 1 drum put 1. If it's 20 pails on a pallet, put 1, etc.
- **Packaging Contents Codes** – See the back of the manifest for further direction. We use 01 = drum, 02 = tote, 03 = bulk tanker, 04 = gaylord, 05 = IBC bag or 07 = pallet, pails, boxes etc. The only code that we do not use is 06. If code 07 is used, describe the container type i.e. 07 = 20L pail. Place the description in the Circulation no. – Quebec only box.

Box 10

- **Physical State** – this will be either L = liquids, S = solids or G = gas

Box 11 – 19

- **International Use Only** – See SOP 20.50.6 Notice preparation for Trans-Border shipments. Additional information can be found in Vol. 139, No. 11, Canada Gazette Part II, June 1, 2005, as well as the User Guide to Implementation, www.ec.gc.ca/tmb/eng/guides_e.html.

Box 20

- **Consignor Certification** - It is important to note that only a person who is TDG certified can sign off on this shipment of waste material.

Box 21

- **Date** – The generator is to then fill in the date of shipment, the time the shipment is departing and the expected arrival date of the shipment at the intended consignee's location.

Box 22

- **Special Instructions** – It is important to note that a 24-hour emergency number appear in this section. If there is a spill while in transit, the transporter can call this number for assistance. Also, any special handling instructions for the waste being transported should appear here. The number we use at the MEC for this box is (204) 957-6327.

Box 27

- **Reference Nos. of other Manifest(s)** – If there are additional manifests for the same shipment from the same location on the same date, list the manifest numbers in this section. If there are no other manifests, leave this section blank.

5.2 Carrier's Responsibility

Ensure the following information in part B, carrier is filled out fully (see attached manifest example):

Box 23

- **Registration No/Provincial ID No.** – This is the unique provincial number that has been assigned to the carrier. A carrier may have many numbers since each province issues their own carrier number. Miller will use the carrier numbers that have been assigned to them by the province of origin of the shipment.
- **Company Name** – The name of the transport company.
- **Address** – Fill in the full mailing address for the transport company

Box 24

- **Registration No.** – Fill in all plate numbers, trailer numbers etc. for the vehicle that is transporting the waste.

Box 25

- **Point of Entry/Exit** – If the transporting vehicle will be travelling from province to province, or country to country, a point of entry and point of exit must be filled out. If the transport is occurring within a province, this information is not applicable.

Box 26

- **Date** – Make sure to fill out the date fully. The date to be used is the actual date that the shipment is commencing.
- **Name of authorized person** – The driver of the vehicle is to fill in all information in this section. It is important to note that only a person who is TDG certified can legally transport waste material, therefore only such a person can sign this section.

5.3 Consignee Responsibility

Ensure that the following information in part C, consignee (receiver) is filled out fully on copies #3 – 6 (see attached manifest example):

Box 28

- **Registration No./Provincial ID No.** – The consignee (receiver) will fill section in with their assigned receiver number.
- **Consignee information same as intended in consignee in Part A** – If the information is the same as what appears in boxes f) – j) in Part A, tick off the "Yes" box and proceed to step D. If the information is not the same, tick off the "No" box and proceed to step C.
- If the information that appears in part A, intended consignee is different than the actual consignee information, this whole section must be filled in.

Box 29

- **Date received** – This is the date that the waste material was actually received from the transporter to the consignee.

Box 30

- **Specify company name** – If the waste is transferred to another receiver/consignee, identify the company name and provincial I.D. no.

Box 31

- **Quantity received** – This is the amount of the waste that is actually received and should be similar to, or the same as, the quantity shipped. Information entered on the drum tracking forms from the technicians who verified the waste upon arrival at MEC should be added here.
- **Units** – This is the unit of the waste stream. This should equal what appears in part A.

Box 32

- **Identify any shipment discrepancy problems**– This column is used to note any discrepancies from what was stated in part A section o) and what is actually received. If there are no discrepancies, the word "None" can be used in this column. If the weights or litres are not accurate, use the word "Actual" in this column. If there was a miscount between numbers of items stated that was shipped in part A, section s), state it in this column as well.

Box 33

- **Handling Codes** – The handling codes are listed on the back of the manifest. For our shipments, the only handling code that we are to use is "01" – Storage.

Box 34

- **Shipment accepted or refused** – Indicate whether or not the shipment was accepted or refused.

Box 35

- **Decontamination** – Identify whether decontamination of packaging or the vehicle has been carried out by checking the appropriate box.

Box 36

- **Specify other** – If handling code used in box 33 is "other" (09), specify.

Box 37

- **Consignee Certification** - It is important to note that only a person who is TDG certified can legally receive waste material, therefore only a TDG certified person can sign this section

5.4 Distribution of Manifests

All manifests are to be sent to the operations administrative assistant who will then distribute remaining copies to the relevant parties.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 TDG Regulations
6.3 20.50.5 – Manifest Distribution Procedure

7.0 ATTACHMENTS

7.1 Manifest

8.0 APPROVALS

Department Manager

IMS Coordinator

Off-Spec and Restricted Waste Procedures (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

This procedure is provided as information and instruction for receiving waste at the MEC that does not meet expected composition or is of a waste type that requires special handling. The reasons for the special handling may be due to safety, disposal considerations or regulatory restrictions.

2.0 SCOPE

This procedure covers all waste received at MEC.

3.0 DEFINITIONS

Off-Spec Waste – Waste that does not meet assigned barcode with respect to chemical or physical properties.

Restricted Waste – Waste that requires specific handling or documentation procedures or is not allowed to be received at the MEC as per licensing restrictions. These wastes may require that notification to regulatory agencies is initiated. An example of a restricted waste is PCB (polychlorinated biphenyl) waste.

4.0 RESPONSIBILITIES

It is the responsibility of all staff assigned the task of receiving or processing waste at the MEC to follow this procedure.

5.0 PROCEDURE

The following is a list of the types of off-spec and restricted wastes that are received at the MEC from time to time and a set of steps to follow for each.

5.1 Off-Spec Waste requiring Barcode change

Waste received at the MEC is sampled, analyzed and verified by the technicians and the on-site laboratory. The waste may not meet original expectations once the container is opened and visually inspected or analyzed. When this occurs, a profile and barcode change is usually necessary. The lab technician and senior MEC technicians are responsible for profile/barcode changes.

Barcode changes are to be documented on the drum tracking form (DT027) in the column labelled “Bar Code” (located to the right of the “Sample #” column).

The technicians, as part of the waste verification activity, will re-label or otherwise make the necessary change on the existing label to reflect the profile/barcode change.

5.2 Unknown Material

Unknown material is received at the MEC from the household hazardous waste (HHW) program and other sources from time-to-time. The laboratory technicians are responsible for assigning handling codes on these materials based on information obtained by analysis.

Unknowns are typically labpacked into a drum by MEC technicians. The drum is then moved to the lab area where the lab technician analyzes the unknowns and a handling code is assigned.

5.3 PCB Waste

PCBs are a restricted waste at the MEC. As per the MEC operating license, only small quantities of hazardous waste containing PCB’s may be received and stored. These PCB wastes must be as part of HHW programs. Any other PCB material received at the MEC will immediately be returned to customer service or directly to the customer. The operations manager or operations supervisor must be informed if this material is encountered.

PCB material must be stored in the prefabricated metal cage (compound) that is located at the MEC. This cage must be locked while PCB material is being stored in it. See 20.20.8 PCB Management Procedure (MEC) for further information on the storage and disposal of this type of material.

5.4 Radioactive Waste

Radioactive material is defined in TDG as “Products, substances or articles containing a product or substance with activity greater than 74 kBq/kg are radioactive materials and included in Class 7.”

For the purposes of the MEC receiving and handling radioactive material, there are two relevant categories.

- TDG regulated (Controlled)
- Naturally occurring radioactive material (NORM).

Regulated radioactive material may only be stored at the MEC if it received in small quantities from HHW programs.

NORM may be received at the MEC without special precautions (other than for the chemical hazards) or notifications. It may be shipped to an approved disposal facility as a dangerous good. Technical services should be consulted for assistance if NORM is encountered.

5.5 Biohazardous

As per License No. 58 HW S2 (Clause 61), the MEC cannot receive biomedical hazardous waste excepting those preserved specimens (i.e. critters) that are received periodically from research facilities or clinical laboratories. There are circumstances when Miller receives waste containers indicating the contents are biomedical hazardous wastes.

5.5.1 Identification

Biomedical hazardous waste, or infectious waste, may be identified by the class 6 division 2 TDG label (6.2). Infectious includes products or substances of organisms, which are, or are reasonably believed to be, infectious to humans or animals, or are toxins of such an organism. The facility occasionally receives materials such as sharps (needles and/or razorblades) or materials contaminated with infectious waste (i.e. gloves, tips, etc.).

5.5.2 Handling

Containers received at the facility that are marked as infectious materials or containers that are suspected to contain infectious materials are to be immediately reported to the operations supervisor or operations manager. These containers should never be opened, transferred, or processed without authorization from the operations supervisor or operations manager.

5.5.3 Processing

With an exception to critters, biomedical hazardous waste, or infectious waste, received at the facility will not be transferred or processed. This type of waste will be returned to the generator, unless the generator can provide written authorization that the waste received is not biomedical hazardous waste or infectious waste. In this case, the waste will be transferred from the marked bio-hazardous container to another container appropriate for the waste.

5.5.4 Return or Disposal

In the event that the generator cannot demonstrate that the waste marked as biomedical is not infectious or bio-hazardous, the waste will be returned to the generator at the earliest convenience.

5.6 Explosive or potentially explosive

This category of restricted waste may be subdivided into several groups.

- Shock sensitive materials
- Peroxide forming materials
- Class 1 explosives including ammunition

Shock sensitive materials, including such items as Picric Acid containing less than 30% water, may be treated at the MEC in some cases. Technical services should be notified and will outline the treatment procedure on a case-by-case basis for these materials. Generally, many of these materials may be opened underwater, dissolved and then included into the lean burn waste stream. If it is determined that the container will not be processed at the MEC then it is sent out as a special to an approved disposal facility.

Peroxide forming materials are also handled on a case-by-case basis and may be opened and bulked depending on container type, condition and age. If there is a risk involved in opening or handling, then the container is sent out as a special to an approved disposal facility.

Class 1 explosives are not received at the MEC except in small quantities as part of the HHW program. These materials if received are sent to the City of Winnipeg Police Department.

5.7 Asbestos

Asbestos may be received at the MEC. There are several requirements when shipping asbestos.

- It must be double bagged in 6 mil polyethylene bags that are specially labelled to indicate asbestos.
- Notification must be made to the landfill operator prior to any asbestos being shipped for disposal at the landfill.
- A dangerous goods shipping document is required when shipping asbestos. No hazardous waste manifest is required as per TDG (Special Provision 37).

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.3 20.20.8 PCB Management Procedure (MEC)
6.4 License No. 58 HW S2 RR MEC Operating License
6.5 Transportation of Dangerous Goods Regulations (TDG)
6.6 Form DT027 – Drum Tracking

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Paperwork Requirements for Waste Transfers (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to ensure that all internal paperwork pertaining to bulk waste transfers are completed and distributed properly.

2.0 SCOPE

This procedure applies to internal paperwork that is required when transferring waste from one container to another at the MEC. This includes the transfer of waste into and out of processing and storage tanks.

Labpack documentation is not covered by this procedure. See 20.40.1 Labpack Procedures (MEC) for further instruction.

3.0 DEFINITIONS

- Repack – Transfer of waste from one container to another container
- Decant – Transfer of waste from a container to a tank or bin
- Bulk Transfer - Transfer of waste from a tank or bin to another tank or bin
- Bulk to Container -Transfer of waste from a tank or bin to container (s)
- Container Movement - Moving container (s) from one location to another
- Destroyed - In tracking, this means that the contents of a container of waste that has been assigned a drum id number has been completely transferred and as a result the drum number will be transferred to the recipient container on the tracking system. This could be another container, a tank, bin, tanker or sent for final disposal in its original container.

4.0 RESPONSIBILITIES

All Miller staff assigned to processing waste at the MEC are responsible for following this procedure.

5.0 PROCEDURE

Ensure that sufficient tracking forms are available prior to transferring waste. For all internal tracking forms enter the date and time of the transfer operation and technician name. This is important for data entry purposes so that the information is entered in the correct order.

5.1 Repack – Form RF180

5.1.1 Complete the columns for each source container whose contents are being transferred in the following manner:

- Item #: enter the container number (drum id) in this column.
- Empty: circle the status indicator that applies after the transfer of the container has occurred. Circle yes if the container has been completely emptied and no if the container is not empty.
- L/Kg Transferred: enter the amount being transferred to the destination container

5.1.2 Enter the Destination container(s) information as follows:

- Item #: enter the id number of the container receiving the waste. assign (create) a container number if necessary.
- New: Circle yes for new and no for existing
- Profile: enter the inbound profile of the destination container.
- KG/L: enter the of the destination container.
- Container Type: enter the abbreviated container type (see footer of repack from for list).
- Container Size: enter the container size
- Circle Location: circle the location of the destination container

5.1.3 Hand in the form(s) to the dispatch office once transfer activities have been completed.

5.2 Decant – Form DF179

- Enter in the volume start
- Enter the item #'s
- Enter the bulk location, tank or bin #
- Enter the volume finish
- Enter the amount transferred

5.3 Bulk Transfer – Form BTF177

- Enter the source location in the location field
- Enter the volume start
- Enter the destination location in the location field
- Enter the volume start
- After transfer is complete, in the source section, enter the volume finish, difference , then in the destination section, enter the volume finish and difference

5.4 Bulk to Container – Form BTC176

- In the source section, enter the bulk location, tank or bin #
- Enter the volume start
- Enter the item#
- Enter the profile#
- Enter the Kg/L transferred
- Enter the container type (see legend at bottom of form)
- Enter the container size
- Enter the volume finish
- Enter the amount transferred

5.5 Container Movement – Form CMF178

- Enter the item#'s
- Enter the old location
- Enter the new location

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.20.1 Waste Tracking Data Entry Procedure (MEC)
6.3 20.40.1 Labpack Procedures (MEC)

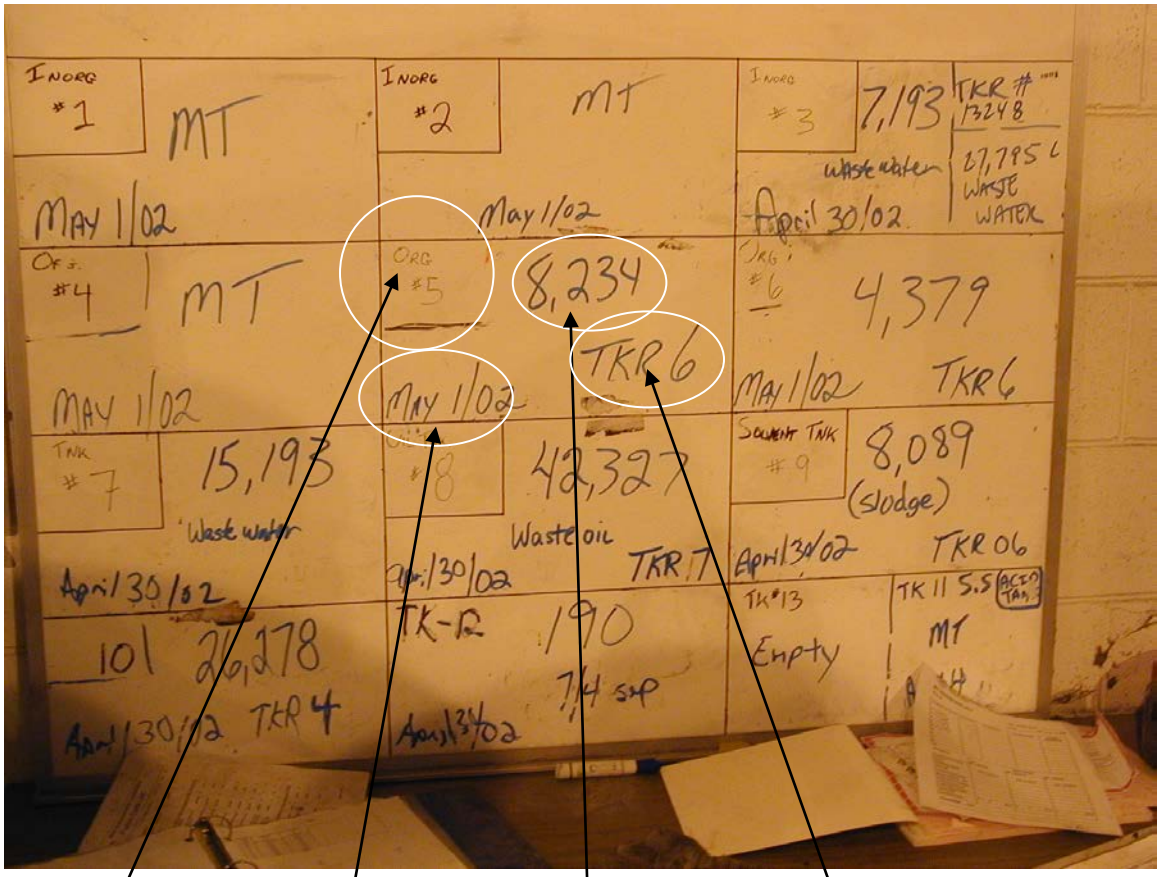
7.0 ATTACHMENTS

7.1 Annotated Picture of Tank Board
7.2 BTC176 Bulk to Container Form
7.3 BTF177 Bulk Transfer Form
7.4 CMF178 Container Movement Form
7.5 DF179 Decant Form
7.6 RF180 Repack Form

8.0 APPROVALS

Department Manager	IMS Coordinator

Tank Board



Tank #

Date

Volume of Waste

Handling Code

Waste Verification and Sampling Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Materials must be identified and scheduled into the MEC facility prior to acceptance. Current practice for the transfer facility requires that all waste streams be sampled to verify classification and to assign handling and processing codes. If the waste has not previously been characterized, it must be analyzed to determine the appropriate treatment process and off-site receiving facility. All materials have been packaged according to TDG requirements prior to acceptance, and containers receive a unique identification number for tracking purposes. Any containers of questionable integrity are over-packaged, or repackaged. A waste profile is generated for each waste type received.

2.0 SCOPE

This procedure applies to all waste received at the MEC.

3.0 DEFINITIONS

Composite Sample – A single sample that is collected from a set of drums or totes of the same waste stream from the same customer. A small quantity from each container is collected and put into a container for analysis. The reason that this is done is to increase the efficiency of sampling without compromising accuracy.

4.0 RESPONSIBILITIES

All staff receiving waste at the MEC are required to follow this procedure.

5.0 PROCEDURE

5.1 Drum & Tote Sampling/Tracking for Liquids & Sludges

The materials required for this procedure include sampling tubes, tools to open drums, sample jars, sample logbook, drum tracking forms and personal protective equipment (PPE). Sampling is to occur as soon as possible upon unloading waste. Drum and tote sampling is best performed by two technicians working together with one documenting and the other conducting the physical sampling.

1. Obtain the corresponding drum tracking sheets (DT027, if applicable) and drum identification numbers from the lab.
2. If the waste is not accompanied by drum tracking paperwork, MEC technicians upon receiving the waste must complete this documentation. See 20.20.2 Waste Tracking (MEC) for instruction on the completion of drum tracking documents.
3. Check and verify the tracking numbers from the waste containers as they are sampled.
4. Wear PPE consistent with the hazard of the waste materials.
5. Remove the lid from the sample collection container.
6. Open the drum or tote container(s) with the appropriate tool, usually a bung wrench or socket wrench.
7. Insert the glass tube into the container to the bottom or until a solid layer is encountered.
8. Allow the liquid to reach its natural level in the tube.
9. Cap the top of the sampling tube with thumb (or tapered stopper).
10. Insert uncapped end into the sample container and release thumb allowing contents of tube to empty.
11. Repeat as necessary to obtain sufficient volume for analysis, usually 250ml or 500 ml.
12. Note the sludge and volume levels while sampling.
13. Record the sludge (in inches) and the volume (Lt) or mass (Kg) on the drum tracking sheet.
14. Note that billing information is calculated from the information in the drum tracking system and so it is very important to be accurate.
15. Composite samples should be taken from drums of similar waste from the same sales order number. A 250 ml or 500 ml composite sample is normally sufficient. Note that if sampled waste looks different or has different properties, collect as a separate sample.
16. Record the drum number and the date in the sample logbook.
17. Record the sample number in the corresponding column on the tracking sheet, and write the sample number on the sample jar lid with a permanent marker.
18. Bring completed drum tracking forms and samples to the Lab.
19. Once an analysis has been prepared by lab, a waste handling code is assigned to each container.
20. Obtain completed waste handling code from lab and apply to corresponding process code to the container of waste.
21. Waste is sorted and treated according to codes determined in the lab. Individual procedures have been created that correspond to these codes.

5.2 Tanker Sampling

1. Obtain the plastic tanker sampling tube and 1-litre jar with lid

2. Samples from tankers are obtained by dipping the tube into the waste via the man-hole on top of the tanker.
3. Dip the tube into the waste in the same manner as described in steps 8 through 12 in section 5.1 of this procedure.
4. Record the sample number on the jar and on the tracking sheet.
5. Record the sample information in the sample log book.
6. Deliver the sample to the lab.
7. Bring the drum tracking information to the lab.
8. Once the analysis has been prepared by the lab, a waste handling code is assigned to each container.
9. Obtain waste handling code from the lab and apply to corresponding container of waste.
10. Waste is sorted and treated according to codes determined in the lab. Individual procedures have been created that correspond to these codes.

5.3 Solids Sampling/Tracking

1. Sampling for solids is similar to liquid sampling with the following differences:

    - Drums/totes are weighed on MEC scale and weights are recorded on corresponding column on the waste tracking forms.
    - Sludge levels do not typically apply to these waste streams.
    - Recording of the volume of containers with solids is not necessary as the waste is priced by weight.
    - A metal core sampler is the usual tool used for obtaining samples of solid waste.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.20.1 – Waste Tracking Procedure
6.3 DT027 – Drum Tracking Sheet
6.4 SLS087 – Sample Tracking Sheet
6.5 Users Guide to Handling Codes

7.0 ATTACHMENTS

7.1 External Handling Code Legend

8.0 APPROVALS

Department Manager	IMS Coordinator

Sampling Outbound Tanker Waste Procedure (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Waste that is sent from the MEC in bulk tankers must be sampled prior to shipping. Analysis that is performed on the sample will differ depending on the type of waste and the destruction facility being utilized. Sampling is important because Miller needs to ensure the waste falls within limits for composition and chemical properties. Taking a sample will also aid in resolving disputes regarding composition that may arise. Waste in some cases may be co-mingled with another company's waste and therefor it is important to be able to verify the composition of Miller's waste as the need arises.

Additionally, significant surcharges may be applied when waste falls outside the range of parameters of the receiving facility. There is also the possibility that the composition of the material falls out of the operating license of the receiving facility causing a possible load refusal. The regulations of the receiving jurisdiction must be complied with.

2.0 SCOPE

This procedure applies to all bulk tanker waste shipped from the MEC.

3.0 DEFINITIONS

Representative Sample – A sample that is collected from a waste stream in a manner that ensures all portions of the waste stream are present. For example, if there are several distinctive phases in a waste, the sample is taken to attempt to gather each of the phases.

4.0 RESPONSIBILITIES

All MEC staff involved in shipping tanker waste are required to follow this procedure.

5.0 PROCEDURE

5.1 Tanker Sampling

- Obtain a large plastic sampling tube that is compatible with the waste being sampled (tanker dipstick, 7 foot polypropylene tube with 300 ml capacity)

- Obtain a 1-Litre jar with lid.
- Open the bottom valve on the sample tube so that liquid can enter.
- Waste is sampled via the opening on top of the tanker.
- Dip the tube into the waste slowly in order for the sample tube to collect a representative sample as it is lowered through the waste.
- When the sample tube reaches the bottom of the tanker, tap the end on the bottom so that the cap closes and the tube can be removed while the liquid remains in the tube.
- One dip of the sample tube per tanker is required.
- Remove the tube and empty the contents into the 1 L jar.
- Record the sample number on the jar and in the sample logbook.
- Deliver the sample to the lab and give to the lab technician.

5.2 Lab Analysis

As previously mentioned the MEC lab will analyze a sample for parameters that are dependent on the specific disposal option for that waste. Results of analysis are to be shared with the operations manager or the operations supervisor upon finalization of testing.

Resulting analysis will be stored electronically in EnviroWare, see SOP 27.90.1 Lab Analysis. Sample material will be saved in the lab until such time as the load has been received and invoiced by the receiving facility.

5.2.1 Rich waste loads (see also 20.80.1 Rich Organic Processing (fuel blending) are analyzed for the following parameters:

- Total water content
- BTU content (heat of combustion)
- Flash point
- Solids content
- pH
- Halogen content

5.2.2 Lean waste load (see also 20.80.2 Lean Organic Processing (Lean Burn) are analyzed as follows:

- Total water content
- BTU content (heat of combustion)
- Flash point
- Solids content
- pH

- Halogen content

5.2.3 Oil waste loads are analyzed as follows:

- Water content
- Flash point determination
- Halogen content

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.3 20.80.1 Rich Organic Processing (fuel blending)
6.4 20.80.2 Lean Organic Processing (Lean Burn)
6.5 MEC Laboratory Methods Manual
6.6 27.90.1 Lab Analysis (MEC)

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Drum Cleaning and Washing

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

To provide employees with a guide as to what is an acceptable criteria when cleaning or washing drums which are to be reused internally and to sold to our customers.

2.0 SCOPE

To provide MEC Technicians with the means to safely clean and/or wash drums and to provide guidelines for acceptance criteria.

3.0 DEFINITIONS

Clean container – A container (drum, tote or pail) that is in good physical condition, contains no residual materials (including odors), and is suitable for immediate reuse by Miller or by a customer.

Reusable container – A container (drum, tote or pail) that has been emptied of most (e.g. <1" residual material in a drum) of the contents and can either be reused by Miller or a customer for compatible material or sent to a commercial drum cleaner before being reused. These containers may give off vapors upon opening.

4.0 RESPONSIBILITIES

It is the responsibility of all MEC Technicians associated with drum cleaning/washing to perform this task safely and to understand what is an acceptable criteria for a clean drum.

5.0 PROCEDURE

- Determine which drums can be cleaned/washed

5.1 Methods of Cleaning or Disposal of Containers

Containers that have been used to contain waste are sometimes suitable for reuse once emptied of their original contents. The MEC has limited drum

cleaning equipment and therefore only simple cleaning procedures as described below can be done at present. If clean containers are required by customer service or by the customer and the container cannot be cleaned sufficiently at the MEC, the container may be sent to a commercial facility for cleaning or new drums purchased.

Drums and totes are the most common types of containers reused by Miller. Pails that have been used as labpacks are also reused but usually do not require cleaning.

Drums that can be reused include open top (205 L and overpacks) and bung type drums. These containers are either metal or plastic and are cleaned at the MEC either by rinsing with hot water, scraping with hand tools or other simple means of removing of the residues. Refer to Section 5.2 of this procedure for more information on cleaning.

Totes are typically utilized to contain liquids and/or sludge. They must be pumped out as completely as possible and rinsed before being reused. If residue remains, rinsing with hot water while pumping is performed in order to dissolve and remove the residue. If this fails to sufficiently clean out the tote, the top is cut off with an air chisel and the remaining material shoveled out. The tote is then cleaned and cut (if deemed clean enough) into sections for the plastic to be recycled through the shredding system.

The tops are cut off bung drums that cannot be cleaned. An air chisel is typically used to remove tops from bung drums. Once the top is removed, these drums are then scraped out and the drums sent for recycling (if metal) or to PB2 for shredding (if plastic).

An open top drum must never be sent to customer service or to a customer's site if it contains vermiculite (especially where contaminated) or other easily removed materials.

A closed top drum must never be sent to customer service or to a customer's site if it contains greater than 1" of residue or is in poor physical condition.

All labeling must be removed or obliterated (e.g. spray painted) prior to either reuse or disposal.

MEC technicians are to inspect all containers being sent to customer service to ensure that they are cleaned to the maximum extent possible given the current equipment at the MEC.

The containers are to be labeled as "Clean" if they are completely empty, are in good physical condition and will not give off vapors or odors when opened. "Clean" labels are located in the wash trailer and more can be printed off.

No labels are to be used on the reusable (but not clean) containers. This will indicate that while the container is reusable, it is not to be considered clean.

If the container is not reusable it must not be sent to customer service.

5.2 Summary of Methods for Processing Reusable Containers

The list below summarizes cleaning methods for common types of containers that have been deemed reusable specifically, the container is in good shape and most of the contents can be removed by relatively simple means

Container Type	Use	Cleaning Method	Destination
Metal Open Top Drums, Kegs	Labpack or Debris	Remove all vermiculite and other material	Reused by MEC or Customer Service
Metal Open Top Drums	Inorganic bulk	Empty/scrape out contents, rinse out with hot water	Reused by MEC or Customer Service
Metal Open Top Drums	Organic bulk	Empty/scrape out contents and rinse out with hot water	Reused by MEC or Customer Service
Metal Open Top Drums (no lid or ring)	All	Empty/scrape out contents and rinse out with hot water	Send to Wpg. to sell to specific customers
Metal Bung Drums	All	Dehead the drum and rinse out with hot water	Send to Wpg. to sell to specific customers
Plastic Open Top Drums	All	Empty/scrape out contents and rinse out with hot water	Send to PB2 for shredding or sell to specific customers
Plastic Bung Drums	All	Rinse out with hot water	Send to PB2 for shredding or sell to specific customers
Deheaded Plastic Bung Drums	All	Empty/scrape out contents, rinse out with hot water	Send to PB2 for shredding or sell to specific customers
Totes	All	Rinse out with hot water	Reused by MEC or Customer Service

Summary of Methods for Processing and Disposal of Non-reusable Containers

The list below summarizes cleaning and disposal methods for containers that are emptied at MEC but are **not** suitable for reuse. Reasons for this include the residue being too difficult to be able to be fully removed (resins, adhesives, grease, paint), the container still containing a hazard from trace amounts of residue (flammable solvents, cyanides), too odourous, or the container being too damaged for reuse.

Container Type	Use	Cleaning Method	Destination
Metal Open Top Drums	All	Empty/scrape contents out as much as possible, (rinse if used for inorganics)	Crush in Compactor and put in Recycle Bin
Metal Bung Drums	All	Dehead drum if necessary, empty out contents as much as possible	Crush in Compactor and put in Recycle Bin
Plastic Open Top Drums	All	Empty/scrape contents out as much as possible, (rinse if used for inorganics)	Send to PB2 for shredding or sell to specific customers
Plastic Bung Drums	All	Dehead drum if necessary, empty out contents as much as possible	Send to PB2 for shredding or sell to specific customers
Deheaded Plastic Bung Drums	All	Empty/scrape contents out as much as possible, (rinse if used for inorganics)	Send to PB2 for shredding or sell to specific customers
Totes	All	Cut off top with air chisel and shovel contents into drum	Send to PB2 for shredding or sell to specific customers

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 124001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Labpack Procedures

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to simplify the segregation, packaging, and internal treatment of small containers of waste into the appropriate chemical categories. The procedure is based on the Provincial Waste Codes (PWC), which categorizes the wastes by compatibility. The general categories used are CORROSIVE (which can be inorganic or organic), INORGANIC, and ORGANIC. Mixed wastes fall under both inorganic and organic categories, based primarily on the required treatment and disposal.

2.0 SCOPE

This procedure applies to all labpacking activities that occur at Miller Environmental Corporation (Miller). Internal documentation requirements are also described.

3.0 DEFINITIONS

4.0 RESPONSIBILITIES

It is the responsibility of all Miller personnel handling labpacks to be familiar with this procedure.

5.0 PROCEDURE

5.1 Customer Service Packing Procedure

- Miller uses a combination of the PWC and Transportation of Dangerous Goods (TDG) Product Identification Numbers (PIN) as product codes. For example acids containing heavy metals is a PWC 112C while the generic corrosive liquid PIN is 1760 which combines to 112C-1760. The Miller product list must be used to pick specific codes for each waste stream.

- Wastes must be segregated according to each category heading and placed in the appropriately labeled container. Each category **MUST** be packaged separately. The compatible PWC codes are provided for each category.
- For those labpacks which contain only one waste type, the most specific PWC and shipping name must be used (e.g. acids - PWC 114C).

- Where two or more compatible waste types are contained in one labpack, the appropriate product code for each of the wastes must be used and tracked on separate labpack inventory forms. For example caustic and mercury are compatible and can be placed in the same lab pack, but packed in separated bags or containers within the labpack. Two labpack inventory forms must be completed, one for the caustic, and one for the mercury. The WHMIS label on the drum should correspond to the largest quantity waste type contained within.

- Small containers of waste are placed in the drum and surrounded by an inert absorbent such as vermiculite. There should be enough absorbent to cushion shocks and to absorb all the liquid waste in the containers packed in the drum.

- A small container which is leaking, or whose integrity is in doubt should be placed in a plastic bag prior to being placed in the drum.

5.1.1 Rules of Thumb

- Never package incompatibles together. The following categories must not be mixed with other materials:

    - non-oxidizing acids
    - oxidizing acids
    - inorganic oxidizers
    - organic oxidizers
    - alkali
    - organics
    - reactives with ANYTHING else
    - unknowns categorize using pH, flammability, and oxidizer tests
    - ASK if you do not know the answer.
    - Use the Labpack Compatibility Table, chemical dictionary, and MSDS to determine category and compatibility.

5.2 MEC Unpacking Procedure

- This section covers the processing of labpacks that are received at the MEC. This includes receiving, unpacking, segregating, rerouting, re-packing, and internal treatment of chemicals received in labpacks. The required documentation is also covered as part of this procedure.

5.2.1 Receiving and Repackaging

- Many of the labpacks received at the MEC from various sources are opened and repackaged with a portion of the contents directed for internal treatment (see next section) and the balance sent for external disposal if the contents are not able to be effectively processed at MEC.

- The labpack is to be received as per 20.30.2 (Waste Verification and Sampling Procedure (MEC). Regardless of whether Miller Customer Service Technicians, waste brokers or individual customers pack labpacks sent to the MEC, they are essentially handled in a similar manner. The documentation may differ depending on the origin of the labpacks. The series of steps to follow is listed below.

    - Review the documentation sent with the labpack.
    - Open the labpack and remove a container.
    - Using information from the label or from accompanying paperwork, determine the chemical name of the item.
    - Direct the chemical for internal treatment or relabpack using chemical knowledge, resources provided and labpacking experience.
    - If you do not know which code applies, the following resources should be consulted:

- Miller Labpack Guide
- Hawley's Condensed Chemical Dictionary
- MSDS
- Transportation of Dangerous Goods List II, Schedule II
- Another Miller technician or technical staff

- If the proper code for the material cannot be readily determined the material is to be segregated as an "unknown" and held until further investigation, including possible lab analysis determines the proper code and treatment. See 20.20.5 Off-Spec and Restricted Waste Procedures (MEC) for further guidance on how to deal with unknowns.

- Miller presently utilizes a disposal facility that employs a chemical segregation system as shown below. This is the method that they use to qualify and accept labpacked materials and is also used to segregate for repacking and internal treatment. These requirements are subject to change and as a result each labpack inventory is faxed to the disposal facility for approval prior to shipping.

  Coding System:

- Code A Inorganic acids
  - Elements and Inorganic Salts that do **not** liberate gaseous products when acidified.

- Code B Inorganic Alkaline chemicals
  - Organic bases
  - Elements and Inorganic Alkaline Salts
  - Elements and Inorganic Salts that liberate gaseous products when acidified.

- Code C Solid Organic compounds, excluding Organic Acids and bases

- Code D Organic Liquids, including Organic Acids

- Code E1 Inorganic Oxidizers, excluding Oxidizing Acids
- Code E2 Inorganic Oxidizing acids

- Code F Pesticides

- Code S Specials (subdivided as follows)
  - Sa Air Reactives
  - Sw Water Reactives
  - Sc Cyanides
  - So Organic Oxidizers
  - Se Explosive and Potentially Explosive
  - Si Isocyanates

- In addition to the above coding system, several chemicals are required to be separated, treated or shipped separately for external disposal. The Miller Chemical Dictionary lists special requirements for a chemical where necessary.

- It is important to note that not all of the above listed codes are sent to the same disposal facility.

5.2.2 Internal Treatment

The portion of the labpacks redirected for internal treatment are segregated into compatibles after "unknowns" are identified enough to be categorized using chemical knowledge, resources provided and labpacking experience including possible lab analysis to determine the proper code and treatment.

All bulking is done under the appropriate scrubbers, with the appropriate PPE, with a fire extinguisher, and water supply on hand.

Organics are bulked under the organic scrubber in the labpack area in the transfer station building and inorganics are bulked under the inorganic scrubber in process building 1 (PB1). Dissimilar chemicals that are compatible are bulked into a pail and drum that is being mixed (a little is decanted into the pail and the rest goes into the drum, to creat a representative composite sample that is similar to the drum.) So, if there is any reaction due to improper labels, names, identification of "unknown" and/or contamination that there is a manageable volume to deal with. Once a bulk drum is full a sample is taken to the lab for analysis to determine proper code for internal treatment or external disposal. Organic liquids and small volume organic solids are bulked into drums for blending in the vat (PB1) along with large volume organic solids. Inorganic liquids and small volume inorganic solids are bulked into drums for neutralization in tank 11 (PB1). Large volume inorganic solids are coded for stabilization in bins in process building 2 (PB2).

Some chemicals are bulked for shipping if there is sufficient volume of the identical chemical to do so and the contents are not able to be effectively processed at the MEC.

5.2.3 Internal Documentation

Two internal forms are used to document and track materials placed into labpacks or bulked. These are form LPI028 (Labpack Inventory Form) and RF180 (Repack Form). Copies of these forms have been included as attachments.

5.2.3.1 LPI028 – Labpack Inventory Form

This is the form that is used by customer service when preparing labpacks. This form will be received with the paperwork package and will have sections A, B and C completed. The form was originally designed for section D to be completed by the MEC upon processing the container. This section is no longer used. A copy of the form will also accompany containers of labpacked waste when they arrive. The form should be contained within a shipping pouch and attached to the container. Office staff processes the other copies of the form (four in total). The copy (yellow), if attached to the source container is placed into the shipping pouch located on the recipient container once physical transfer of the contents has completed. Tracking information is recorded on the Labpack Transfer Sheet (see next section). If the contents are directed to several containers, the transferred container(s) information can be written on an existing labpack inventory sheet in the shipping pouch of the recipient container.

In addition to the original yellow form, which is used for tracking waste, a separate blank photocopy of this form (LPI028) may be used to record the current inventory of the recipient container. This inventory is kept with the container until it is full. Once the container is full, this inventory is then photocopied and faxed to the disposal facility for review prior to shipping the container.

5.2.3.2 RF180 – Repack Form

This is the form that is used when the contents of an incoming labpack (source) are unpacked and the contents directed to several recipient containers. This form may be used regardless of the source or destination of the labpack or bulk container. There are three sections to the form. A "Source" part, in which information about the incoming labpack is recorded, a "Destination" part that applies to the container(s) the waste is being labpacked or bulked into, and a "Location" part that describes the destination of the container. In addition to these three parts, the date, time and name sections at the top portion of the form also require completion.

The form is completed as follows:

Source Container

Item # – enter the container id number of the source container.
Empty – circle yes or no to indicate if the source container is now empty.

Destination Container

L/Kg Transferred – enter the volume or weight transferred from the source container to the destination container.
Item # – enter the container id number of the destination container.
Status (New/Existing) – enter the status of the recipient container after transfer has occurred.
Profile – enter the profile of the recipient container.
Kg/L – enter the volume/weight of the recipient container.
Container Type – enter a description (e.g. drum or pail) of the recipient container. A legend is reference at the bottom of the form.
Container Size – enter the size (e.g. 20L or 205L) of the recipient container.

Circle Location

5.3 Safety

Minimum requirements for labpacking include gloves, glasses, chemical apron, proper footwear and hardhat. Some materials pose increased risk and therefore additional PPE may be required for labpacking and bulking. Wear PPE consistent with the hazards of the waste materials. A senior technician or supervisor can provide safety information upon request.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 Miller Labpack Guide
6.3 Product code list
6.4 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.5 23.10.3 Labpack Procedures
6.6 20.20.5 Off-Spec & Restricted Waste Procedure

7.0 ATTACHMENTS

7.1 LPI028 Labpack Inventory Form
7.2 RF180 – Repack Form

7.3 Labpack Disposal Facility Flowchart

8.0 APPROVALS

Department Manager	IMS Coordinator

Processing Facility VOC Emission Control Management Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

All processing emissions generated during waste handling and processing activities in the process building must be scrubbed and monitored before release to atmosphere.

2.0 SCOPE

VOC emissions are collected from the Line 2 organic process, and processed through an activated carbon filter bed. The output from the emission control system (scrubber) is monitored by an infrared sensor connected to a data collection/averaging and warning system. The alarm has 2 set points, the first at 300 ppm 24-hour average as a warning, and a second at 500 ppm 24-hour average as a maximum allowed.

The occurrence of a 500 ppm alarm is a non-compliance of the facility operating license and must be formally reported to Manitoba Conservation. The operations manager is responsible for this reporting.

This procedure covers the management of the scrubber to prevent breakthrough of the VOC's under normal conditions and how to manage alarm conditions should they occur.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

It is the responsibility of all MEC personnel to be aware of the emission alarm management procedure, and to follow the procedure in the case of alarm conditions.

5.0 PROCEDURE

5.1 Normal Activities

When processing or pumping liquid organic materials, attention must be paid to the VOC monitor on the scrubber to ensure that alarm conditions are not reached.

- Regularly check the VOC monitor before and during all organic processing activities. While processing or pumping, check the monitor every 15 minutes.
- When alarm conditions are about to be reached, shut down all organic liquid processing.
- Determine if the emission level increase is due to a spike, or a continuous break through indicating carbon filter saturation.
- If the increase is due to a short-term spike, discontinue organic processing until the 24-hour average has dropped to at least 200 ppm.
- If the increase has been gradual over a period of time, this indicates that the carbon filter is becoming saturated and must be changed.

5.2 Alarm Conditions

Alarm conditions may be reached in one of three ways. The first is when the system is first started up, the second is during pumping of volatile solvent where a spike may occur and the third when the carbon bed becomes saturated and breakthrough occurs. In the event of an alarm due to VOC emission:

1. Cease all organic processing activities.
2. Check the VOC monitor readout to determine if the alarm is due to a spike, or a continuous break through.
3. Silence the alarm on the gray enunciator panel in the control room by pressing the “ACK” (acknowledge) button and then reset.
4. Switch the emission control system over to the alternate carbon bed.
5. Allow sufficient time for the 24-hour average to drop by at least 100 ppm below the 300 ppm alarm level.
6. Continue processing activities.
7. Continue to monitor the 24-hour average levels every 15 minutes while processing.
8. Cease processing activities if the 24-hour average approaches the 300 ppm alarm level.
9. If the increase is due to a short-term spike, discontinue organic material processing unitl the 24-hour average has dropped to at least 100 ppm below the 300 ppm alarm level.

10. If the increase has been gradual over a period of time, the carbon filter is becoming saturated and must be changed.

5.3 Carbon Filter Change

The scrubber consists of a double-sided air management unit constructed such that the airflow can be directed to either side as necessary. Each side of the scrubber consists of alternating trays of activated carbon acting as filter media. When the activated carbon filters are saturated, the carbon must be changed in each tray.

1. Open the side panel on the side of the scrubber containing the saturated carbon.
2. Slide the trays individually from their racks and store vertically with the top up.
3. Remove the top cover, and empty the tray over a waste carbon storage container, repeating the process for each tray until all are empty.
4. Using a scoop and funnel, fill each tray with new activated carbon, replacing the cover of each tray as it is filled.
5. Slide the refilled trays back into the scrubber.
6. Close the side panel and the unit is ready to be used.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

7.1 Picture of Dry Scrubber – Processing Facility

8.0 APPROVALS

Department Manager

IMS Coordinator

Transfer Station VOC Emission Control System Management

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The transfer station emission control system (scrubber) is designed to control volatile hydrocarbon emissions during material transfer operations involving labpack chemicals, aerosols, and small flammable gas cylinders.

2.0 SCOPE

This procedure describes the operation, maintenance, and safety procedures of the scrubber.

3.0 DEFINITIONS

4.0 RESPONSIBILITIES

It is the responsibility of all operations personnel in the transfer station to understand and follow the requirements for operation and maintenance of the scrubber.

5.0 PROCEDURE

5.1 Scrubber Operation

1. Check butterfly valves prior to operation to ensure that the all valves except the ones needed for the current operation are closed.
2. Turn on fan by flipping switch located on the wall and directly to the right of the unit.
3. Manually check to confirm airflow through the vent arm to be used.
4. Position vent arm as close as possible to the emission source.
5. Perform material transfer until complete.
6. When work is complete, or at the end of the day, turn off scrubber and close all valves.

Refer to Attachment 7.1 Picture of Transfer Station Scrubber.

Operation of the scrubber with the isolation valves closed could cause overheating and equipment damage.

5.2 Safety Precautions

1. Periodically during the work in progress, manually check the temperature of the scrubber by placing a hand on the scrubber casing. Determine if the temperature is ambient, warm, or hot.
2. If the temperature is ambient, continue work.
3. If the temperature is warm or hot, immediately turn off the fan and close all valves.
4. Wait until temperature has returned to ambient before continuing operation.
5. Oxidizing agents, acids, solids or particulate materials must not be aspirated through the scrubber. The scrubber must only be used to control volatile emissions from non-oxidizing flammable liquids (solvents), halogenated solvents, organic pesticides, and flammable gases.

5.3 Maintenance

1. On a weekly basis, monitor the output VOC concentration while processing to determine if the scrubber is containing the emissions.
2. If break through is occurring shut down the system and change the carbon.
3. To change the carbon, unscrew and remove the sealed panel on the bottom of the unit and allow the carbon to free flow out of the unit.
4. A spill tray may be placed underneath the unit to collect the saturated carbon.
5. A forklift (and chain) may be used to rotate the unit to make the opening at the bottom more accessible.
6. The pallets of waste located near the unit should be moved to allow easier access to the carbon unit.
7. The carbon, once emptied, can be shovelled from the tray into 45 gallon drums, sealed and sent for disposal.
8. To refill, unscrew and remove the top panel of the unit and pour in new carbon (8 –10 particle size). The capacity of the unit is approximately 500 L.
9. The drum tipper may be utilized to lift and tip the drum over the opening on the top.
10. The tin lid on the fibre carbon drum may be bent back to allow a manageable flow of new carbon to be emptied into the unit.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

7.1 Picture of Transfer Station Scrubber

8.0 APPROVALS

Department Manager

IMS Coordinator

THC Monitor H_2 Tank change

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

This procedure was created to describe the steps required to change the compressed hydrogen fuel tank which supplies the total hydrocarbon monitor (THC).

2.0 SCOPE

This procedure is specific to changing the H2 tank for the THC monitor located in the monitoring shed at the MEC.

3.0 POLICY

It is the policy of Miller Environmental Corporation (Miller) that the fuel tank levels be monitored regularly (biweekly), and a new tank ordered when the pressure drops to about 200 psi.

4.0 DEFINITIONS

PSI Pounds per square inch

5.0 RESPONSIBILITIES

It is the overall responsibility of the operations manager to maintain the environmental monitoring system, and to delegate where necessary the operational components to MEC technicians as appropriate.

6.0 PROCEDURE

- Transport the new tank to the monitoring shed.
- Obtain the key for the monitoring shed from just inside the right side, bottom, back of the hydrogen storage.
- Shut off the THC monitor using the on/off switch on the electronics cluster on the inside of the door of the analyzer (far right top of electronics, red toggle switch).
- Obtain the key to the H_2 shed padlock from the key hook just inside the monitoring shed door to the right at head height.

- Obtain the large adjustable wrench from the tool rack, and a roll of teflon tape from the shelves on the back wall.
- Unlock and open the H_2 shed
- Turn off the valve on the H_2 tank, loosen the regulator with the wrench and remove the regulator
- Screw the protective cap on the H_2 tank, and remove the tank from the shed
- Roll the new tank in, remove the cap, and orient the valve to face towards the regulator
- Wrap teflon tape on the regulator threads
- Attach the regulator, tighten with the wrench
- Obtain a squirt bottle of snoop from inside the shed, turn on the H_2, check all the connectors for leaks, especially around the regulator/tank connection
- If no leaks, remove tools etc. and lock the H_2 shed.
- Open the front plate on the THC analyzer (using small screwdriver to turn the latch screw ¼ turn counter clockwise)
- Turn on the on/off switch on the electronics cluster on the door of the analyzer (far right top of electronics, red toggle switch)
- Open the plexiglass cover inside the analyzer (2 wing nuts, one each on top left and right sides)
- Adjust air regulator to 5 psi to start
- Adjust fuel regulator to 25 by holding PURGE/IGNITE switch up to PURGE position and rotating valve until it is set at 25 psi.
- Leave the sample flow set at 5psi.
- Close the plexiglass panel
- Prop the PURGE/IGNITE switch up to PURGE position with something, and leave it to purge for up to 30 minutes. (If the unit has been shut off only for the short period of time that the tanks were changed, 5 to 10 minutes of purge will be sufficient).
- Following the purge time, briefly flip the PURGE/IGNITE switch down to the IGNITE position (hold for about 5 seconds).
- The FLAME indicator on the front panel should be on (red glow light), and the H_2 gauge should be steady at 25 psi.
- If the FLAME indicator does not stay on and the H_2 pressure drops to 0, again actuate the IGNITE switch, holding it in the ignite position for 5 seconds. Continue doing this until the FLAME indicator indicates that the flame has caught.
- If after several tries, it doesn't ignite, purge for a few more minutes (up to 5 minutes) and try igniting the flame again. If it still will not ignite, give it up for now, turn off the THC and close the hydrogen tank valve, and call Ross.
- If it has ignited, slowly increase the air regulator valve to read 15 psi.
- Check the gauges to make sure that the air is set at 15, fuel 25, and sample at 5 psi.

- Close the outside panel and lock
- Leave the unit to stabilize and calibrate over night
- Check the calibration (another procedure) the next day

7.0 REFERENCES

7.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.2 Rosemount Analytical Inc. Model 400A Hydrocarbon Analyzer manual

8.0 ATTACHMENTS

9.0 APPROVALS

Department Manager

IMS Coordinator

Dry Scrubber Data Download and Management

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The MEC facility operating license requires that volatile organic emissions from the organic dry scrubber be monitored on a continuous basis. The data must be collected at an acceptable frequency from the recorder unit, and translated into an MS Excel™ file which can be easily viewed and managed.

2.0 SCOPE

Total volatile hydrocarbon data is continuously collected by an in-line infra red (IR) sensor located at the outlet of the organic process dry scrubber. The data is recorded and displayed by a data controller (visual recorder) located in the process control room. The data must be manually collected from the recorder on a diskette on a weekly or more frequent basis as conditions may require.

The collected data is translated into an excel file by means of a program designed for the purpose. The data in the excel file must then be copied into a monthly data management file which calculates daily 24 hour emission averages, and presents the data as a monthly summary.

3.0 DEFINITIONS

See Glossary

4.0 RESPONSIBILITIES

The MEC facility manager is responsible for ensuring that the data is collected from the recorder at an appropriate frequency, and that the data is translated and collected in a monthly summary file for easy access, viewing, and for inclusion in the annual report.

5.0 PROCEDURE

5.1 Data Collection

Data is collected every 30 seconds from the IR sensor by the recorder. The recorder memory is capable of collecting up to approximately 13 days of data before

beginning to overwrite. The data must be downloaded on a weekly basis as a minimum to a diskette inserted into the unit.

1. THC recorder is located in the control room. Locate the maintenance logbook in the cabinet below the THC recorder.
2. Open logbook to dry scrubber section and locate ongoing logsheet.
3. Record date in left-hand column of logsheet under the last entry.
4. Record the maintenance being performed in the appropriate column.
5. Record the 24-hour average in the pre-maintenance column prior to inserting diskette in the THC recorder. The 24-hour average reading is located in the upper right hand corner of the THC recorder screen, which is the BLUE column.
6. Open the door on the THC recorder by lightly pulling on the upper left-hand corner.
7. Insert formatted, empty diskette into the slot located on the front of the THC recorder. The THC recorder will automatically begin downloading data and the message SAVING DATA will appear at the bottom of the screen in the YELLOW box.
8. Once the data download is complete, the message SAVING DONE will appear at the bottom of the screen in the YELLOW box.
9. Record the 24-hour average in the post-maintenance column of the logsheet.
10. Enter your initials in the right hand column of the logsheet and place maintenance logbook back in cabinet.
11. Remove the diskette from the THC recorder by depressing the WHITE button on the upper right hand corner of the diskette slot.

5.2 Data Translation

The data collected on the diskette is in a non-readable binary data format which must be translated into Excel format using a program designed to do so. The DVRCVT.exe is accessed from the c:\VR-MEC directory located on the operation manager's computer. The script format used to open the program is:

Dvrcvt.exe a:\<file name>.dat c:\thcdata\<file name>.xls –FE

The originating file is opened, translated into excel by the program as designated by the –FE, and placed into the named directory under the file name provided in the script. The file name format should include the fact that it is dry scrubber data, the week the data represents, and the year. For example, DryWk102.xls. Because the program is old DOS, the name can include a maximum of 8 characters.

1. Insert the appropriate diskette into the operation manager's computer.

2. Open a DOS window and change the path to the directory where the program is located, and enter the command script. (cd.. <enter>, cd VR-MEC <enter>, dvrcvt.exe a:\d001XXX.dat c:\thcdata\DryWkX02.xls –fe <enter>). This will do the translation and save the file in the thcdata directory.
3. When the data translation has competed, the c: prompt will appear. You may insert another diskette to be translated, or close the window. If additional data is to be translated continue to step 4 otherwise go to step 10.
4. Insert the diskette with the data to be translated.
5. Press F3 to open the script.
6. Using the back arrow, move the cursor to the file name and change it to the new data file.
7. Using the forward arrow key, move the cursor to the name for the translated file and change it appropriately.
8. When the script is correct, press <enter>. The program will translate, name and save the new file.
9. When complete, either translate more data using the above procedure, or close the DOS window.
10. Open the weekly data file in excel and scan for any anomalous data, or any 24 hour averages above 500 ppm. Close the file after the review, noting any anomalies.

5.3 Preparation of Monthly data summary

The translated data can now be copied into a monthly data summary spreadsheet template. The appropriate weekly download file must be opened, and the appropriate day's data copied/ pasted into the monthly summary spreadsheet.

1. From the spreadsheet solutions directory, open a new spreadsheet template TmpltDRY_ppm to begin a new month, or open the appropriate existing monthly file.
2. Save a new file using the month and year in the name. (e.g. January02DRY_ppm.xls)
3. Page down to cell B62.
4. Open the appropriate weekly data file prepared following the procedure documented above.
5. Page down to the cell corresponding to the beginning of the month, or to the next appropriate time, which consecutively follows the previous monthly data in an existing monthly file.
6. Place the cursor in the third column of data if there are 2 columns labeled scrub/L ppm and remove the first column of data so labeled. This is a column reserved for data from a second sensor should it be necessary, and contains a large identical number in each cell. If this column has previously been removed, carry on with the procedure below.

7. Highlight the appropriate data selection containing all data cells from the beginning time and date required, to the last time and date required, and copy it to the clipboard.
8. Change windows to the monthly file, and paste the selection into the appropriate location. If it is a new month, the initial cell location is B62. If it is an existing monthly file, paste the selection immediately following the end of the previous data.
9. Check the beginning and end dates against the appropriate cell addresses. The correct cell addresses for the beginning and end of each day are indicated in the calculated cells of the monthly summary spread sheet.
10. If the monthly data summary is complete for the month, save the file and print a copy of the summary calculated cells for future reference. If the month is not complete, save the file and close Excel.
11. The monthly data summary is established for a maximum of 31 days. If the current month is less than 31 days, delete the summary row(s) for the extra day(s).

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 License 58HWS2 RR
6.3 Form SML034 – Scrubber Maintenance Log Form
6.4 Form DSD092 – Dry Scrubber Data Table

7.0 ATTACHMENTS

7.1 Picture of Data Controller

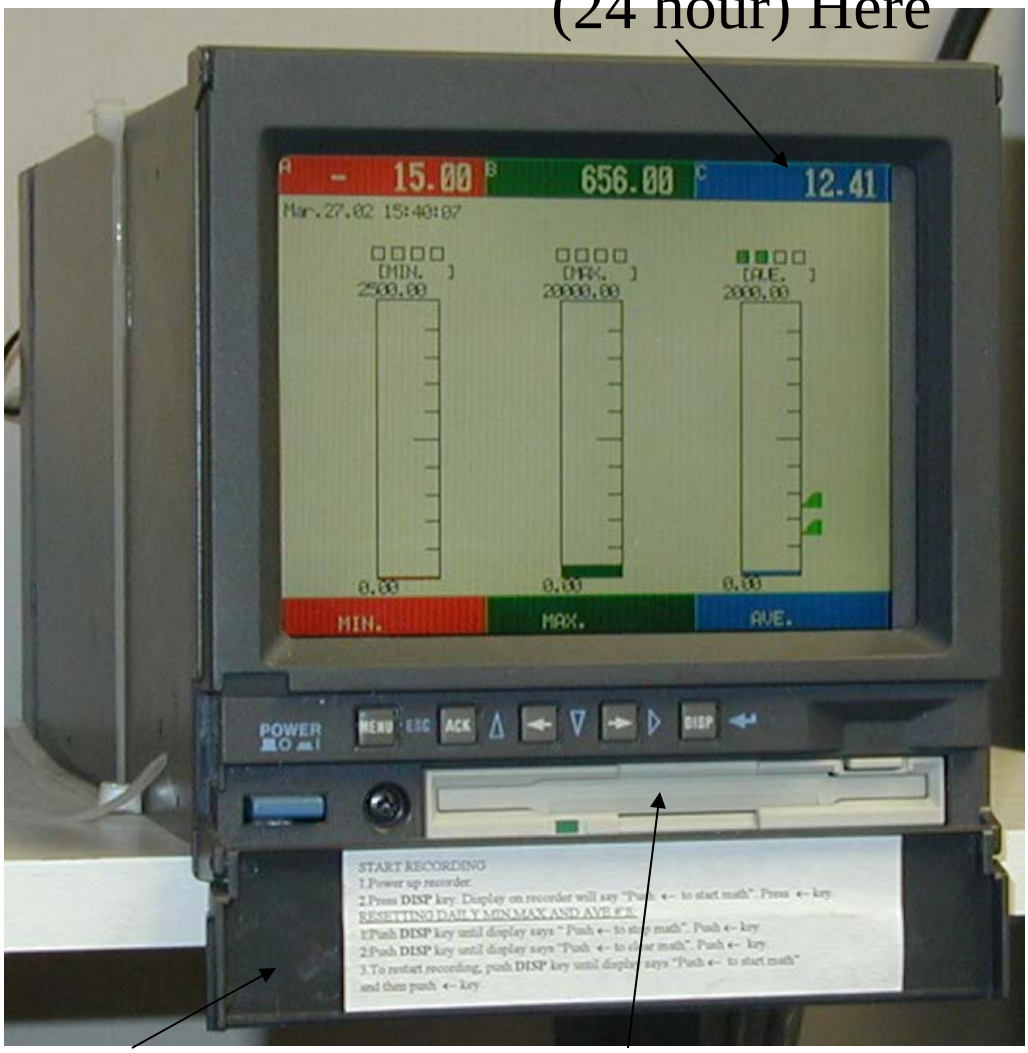
8.0 APPROVALS

Department Manager

IMS Coordinator

Data Controller

Read Data
(24 hour) Here



Door

Insert Disk Here

Notice Preparation for Trans-Border Shipments

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

This procedure documents the step by step requirements for completing and submitting to Environment Canada, Movement Division a notice of intent to transport hazardous waste or hazardous recyclable material to and from the United States**.**

2.0 SCOPE

All hazardous waste or hazardous recyclable material shipments to or from the United States must be approved by Environment Canada and the US EPA prior to transport. A notice must be completed for each disposal option/location. Up to three hazardous waste or hazardous recyclable material types may be included on a notice.

NOTE: The notice must be submitted at least six (6) weeks prior to the first shipment to allow sufficient time for review and authorization by US EPA and Environment Canada. It must be updated annually.

3.0 DEFINITIONS

Administrative Notice form: A document provided by Environment Canada and required to be completed and submitted prior to any trans-border shipment of hazardous waste or hazardous recyclable material .

Notice reference no: A notice number provided by Environment Canada which must be obtained by phone or fax prior to filling out the notice document.

Pre-note: Miller abbreviation for a notice

EIHWHRMR: Export and import of hazardous waste and hazardous recyclable material regulations

IWIC: International waste identification code

4.0 RESPONSIBILITIES

It is the responsibility of any Miller Environmental Corporation (Miller) personnel who is in the position to authorize a trans-border shipment to ensure that a notice (pre-note) has been completed, and notice of confirmation has been supplied by Environment Canada for the shipment(s). The notice must be current, and allow for sufficient volume and shipments.

Technical Services undertakes the responsibility for completing and submitting regular annual pre-notes, as well as any new ones.

It is the responsibility of sales and/or operations to inform and discuss any new pre-notes required well in advance of the first shipment. A minimum of two months advance knowledge is required to complete all the paperwork and notice for submission.

5.0 PROCEDURE

5.1 Preliminary Information and Requirements

Prior to completing a notice, specific information with respect to the disposal or recycling facility, or US exporter must be obtained, as well as a signed agreement with the facility management.

1. Obtain facility information including:
   - Mailing address
   - Facility physical address
   - EPA registration number
   - Licence or permits
   - Insurance certificate
   - Contact information
2. Obtain a signed agreement between Miller Environmental Corporation and the expoter/importer. This agreement will vary based on how the hazardous waste or hazardous recyclable material will be dealt with by the final destination.
3. Obtain a notice reference number from Environment Canada.

If the disposal or recycling facility is different then the exporter additional information for the final destination, as well as a signed agreement between the exporter and the final destination are required.

5.2 Completing the Notice

After obtaining the above information and signed agreement, the administrative notice form can be completed.

1. Administrative notices forms can be found on Environment Canada's webpage. http://www.ec.gc.ca/tmb/eng/pdfs/Administrative_Notice_Form.pdf.
2. Complete the notice electronically. The signature must be completed on the printed document. Use the Canada Gazette Part II, Vol. 139, No. 11 or EIHWHRMR classification guide as references for filling out the notice. The guide: http://www.ec.gc.ca/ceparegistry/documents/regs/g2-13911_r1.pdf.

Referring to the notice, complete all pertinent sections as follows:

- Notice reference number - Use the number provided by Environment Canada.

Box 1

- Options section - choose **one** of the three boxes (disposal, recycling, or recycling at a pre-approved facility). separate notice must be used for each option required.

Box 2

- Exporter Section - The name, registration number, civic, mailing and electronic addresses and telephone and facsimile numbers, and the name of contact and insurance provider/policy no. of the exporter.

Box 3

- Importer section - The name, registration number, civic, mailing and electronic addresses and telephone and facsimile numbers, and the name of contact and insurance provider/policy no. of the importer.

Box 4

- Carrier section - The name, registration number, civic, mailing and electronic addresses and telephone and facsimile numbers, and the name of contact and insurance provider/policy no. of the authorized carrier. All modes of transport that will be used. If additional carrier information can be included as an addenda to section 4.

Box 5

- The name, registration number, civic, mailing and electronic addresses and telephone and facsimile numbers, and the name of contact and insurance provider/policy no. of the authorized facility if different from the exporter (box 2). Refer to schedule 1 of the the EIHWHRMR for the final disposal/recycling operations (D/R code).

Box 6

- Number of imports/exports - enter the number of shipments intended over the 12 month period the notice applies to. This number should be overestimated slightly.

Box 7

- Customs Offices - specify (with addendum) all customs offices the waste could be shipped through.

Box 8

- First export/import - estimate the date of the first shipment, taking into account the length of time needed to approve the notice (up to 6 weeks).

Box 9

- Transit countries - the countries of transit through which the hazardous waste or hazardous recyclable material will be conveyed and the length of time it will be in each country of transit.

Box 10

- Refer to part 4 of the EIHWHRMR classification guide for the applicable IWIC and Basel Annex codes.
- Refer to schedule 1 and 3 of the the EIHWHRMR for the applicable UN number, class and packing group.
- Indicate the total quantity of each hazardous waste or hazardous recyclable material for the full 12 month period the notice applies to. This number should be overestimated slightly.
- Customs code - Miller Environmental Corporation s custom code is 3825.69.0000.
- ID no. & description and POP name, quant. & conc. do not apply (NA).
- Description of the D/R process – use the exact description found in column 2 of schedule 1 of the the EIHWHRMR.

Box 11

- This box does not apply (NA).

Box 12

- Fill in the name, date, telephone number and sign the completed printed copy.

3. Following completion of the notice, review it until it is correct - if it is submitted and there is an error, Environment Canada will request that it be fixed and re-sent to them before it can be processed. As you may know - this adds to the time required to receive final confirmation.
4. Mail or fax the completed notice, addenda's and signed agreements to:

   Movement Division
   Environment Canada
   Place Vincent Massey, 12th floor
   351 St. Joseph Blvd.
   Hull, QC K1A 0H3
   Fax. # (819)953-0508

5. Environment Canada will fax a letter confirming that the notice is complete and that it has been sent on to US EPA for review.

6. Following the EPA review period, which may take up to 30 days, a letter of confirmation will be faxed to Miller if EPA has agreed to the shipments. This letter allows the trans-boundary shipments to occur, and a copy of the letter with a copy of the notice must accompany each shipment to the US.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 Canada Gazette Part II, Vol. 139, No. 11
6.3 EIHWHRMR classification guide

7.0 ATTACHMENTS

7.1 Administrative Notice Form

8.0 APPROVALS

Department Manager

IMS Coordinator

MEC Evacuation Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to ensure the MEC employees, contractors, and visitors on site evacuate the MEC safely and that all precautions are taken in the event of an evacuation due to an emergency situation or drill.

2.0 SCOPE

This procedure applies to any evacuation situation in MEC buildings or anywhere on the MEC property. This includes Lower Explosive Level Alarms (LEL) alarms, fire drills, emergency drills, toxic fume evacuations, fire alarms, and any emergency where an evacuation is necessary.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

It is the responsibility of all Miller staff, contractors and visitors on the MEC grounds to follow this procedure.

The evacuation coordinator will be the most senior operations staff member available.

5.0 PROCEDURE

5.1 Responsibilities by Area

To safely and effectively exit the MEC buildings or property in the event of an emergency situation/drill.

Responsibilities are as follows:

1. Operations manager/supervisor-It is the duty of the manager/supervisor to:
    - ensure all people on site are evacuated and accounted for upon arrival at the evacuation point.

2. MEC technicians – It is the duty of technicians to:
   - acknowledge alarm,
   - sound evacuation alarm(air horn / sirens),
   - shut off forklifts, contractors equipment, pressure washer,
   - pull fire suppression alarm (**Only in case of a serious fire**),
   - exit buildings, and
   - move upwind to a safe distance from buildings.

3. Accounting staff- It is the responsibility of the accounting staff to:
   - proceed to evacuate remembering to bring the sign-in / sign-out book for accountability purposes.
   - move upwind to a safe distance from the buildings

4. Lab staff – It is the responsibility of lab personnel to
   - immediately eliminate any flame source pertaining to the lab
   - exit the building, and
   - move upwind to a safe distance from the buildings.

5. Dispatch office staff – It is the responsibility of dispatch staff to:
   - notify everyone in the dispatch office and accounting staff
   - direct any contractors or visitors to follow dispatch office staff
   - proceed to evacuate, remembering to bring the sign in / sign out book for accountability purposes.

6. It is the responsibility of all Miller staff to:
   - ensure that all contractor visitors are safely evacuated to the designated areas
   - ensure that all ignition sources are eliminated until the emergency is identified. Eliminating ignition sources includes stopping any running equipment in the plant, not starting any vehicles in the parking lot, turning off any lab equipment, and any other possible source which could ignite a volatile atmosphere. NO smoking is permitted by anyone till the ALL CLEAR is given by the evacuation coordinator.
   - determine the designated area by observing the wind sock directly east of the MEC.
   - move upwind of the facility to a safe distance determined by the evacuation coordinator.

5.2 Evacuation Points

1. It is the responsibility of all Miller staff to proceed to the 2 main evacuation points depending on wind direction. The 2 designated evacuation points are # # 1 – The north entrance gate to the east of the facility
   # 2 - The south exit gate to the east of the facility
   All evacuees are to meet in 1 of these 2 locations where roll-call will be taken to determine that everyone is accounted for.
   Once the accountability has been completed it is the responsibility of the evacuation coordinator to determine the next plan of action.

   The evacuation coordinator will assign an evacuation leader (if applicable) for the evacuation point and an entry team to determine the origin of the alarm. The entry team will perform a detailed inspection of the facility and report back to the evacuation point within ½ hour of entry. It is the responsibility of the entry team to communicate with the evacuation point within the ½ hour limit even if the inspection is not completed. This will reassure the evacuation point of the team's safety and will avoid unnecessary dispatch of the emergency response system. The team may then re-enter the facility for an additional ½ hour to complete their inspection.

   If the entry team does not report within the ½ hour limit, it is the duty of the evacuation leader to notify the local emergency system of the situation and to request assistance. If communication is not available at the evacuation point, the evacuation point leader will designate one of the evacuees to flag traffic down on the highway for assistance.

   Once the entry team has determined there is no longer a concern, they will advise the evacuation point leader if it is safe to return to the building. The evacuation coordinator will hold a debriefing meeting immediately after the incident to review and assess the evacuation. Recommendations and changes will be recorded in the minutes of the meeting and steps will be taken to implement any improvements.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 MEC ERP Plan

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager	IMS Coordinator

MEC Respirator Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to outline the conditions and reasons for respirator use during daily activities and tasks at the MEC.

2.0 SCOPE

This procedure applies to any MEC personnel or individual working within the confines of the MEC where respiratory protection is deemed necessary.

3.0 DEFINITIONS

- SCBA – Refers to a self-contained breathing apparatus (supplied air).
- Full Face Respirator – A respirator covering your entire face that uses air-purifying cartridges.
- Half Face Respirator – A respirator covering your nose and mouth that uses air purifying cartridges.
- RPE – Respiratory Protective Equipment.

4.0 RESPONSIBILITIES

This procedure applies to any individual using a respirator on MEC site. It is the operations supervisor/manager duty to enforce this procedure.

5.0 PROCEDURE

Respirators used must meet CSA standard Z94.4 or OSHA (Occupational Safety and Health Administration) 29CFR1910.134.

5.1 All new employees should be fit tested and given orientation on the proper usage and care of RPE (respiratory protective equipment).

5.2 All employees and contractors should be given refresher courses at designated intervals.

5.3 The following tasks require the use of RPE at the MEC when insufficient dust or vapor emission controls are available:

a) Organic Pumping/sludge consolidation.
b) Inorganic pumping/solidification & stabilization.
c) Pesticide bulking.
d) Organic bulking if no scrubber unit is used.
e) Oil Paint and adhesive bulking.
f) Sampling of drums when no local ventilation is being used.
g) Lab packing.

5.4 It is the duty of each person to wear the proper RPE for the duties they perform. Each individual must follow the instructions of the Operations Supervisor and or Manager if he (she) believes that RPE is needed in certain instances.

5.5 Each technician provided with RPE must follow the instructions of maintaining and cleaning their RPE. A complete respiratory protection program including regular worker training, fit testing, maintenance, inspection, and cleaning of the respirator should be followed.

5.6 Air monitoring and sampling should take place in MEC buildings to determine concentrations of chemicals and necessary RPE needed during the times when employees will be using these chemicals.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 CSA standard Z94.4
6.3 OSHA 29CFR1910.134.

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Compactor/Baler Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

To safely and efficiently compact material that can be shipped in a compacted state to save space on loads, as well as make the shipment of these types of wastes more cost effective on their transport and disposal costs.

2.0 SCOPE

To provide the MEC technicians with the means to protect themselves while operating the compactor/baler.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

It is the responsibility of all MEC technicians, or any individual directly associated with any of the material being compacted or baled to abide by this procedure. It is the duty of the operations supervisor and/or manager to enforce this procedure.

- Always operate with all the safety devices in place and in working order.
- Stop the engine when leaving the machine.
- Always keep hands, feet and clothing away from moving parts.
- Always operate in well ventilated area.
- Never put hands in compactor/baler while unit is running.
- Match personal protective equipment to the hazards present in the material being compacted.

5.0 PROCEDURE

- Check the compactor/baler for any defects or leaks before starting unit.
- Open the gate(s), run 3 wires in the guides at the bottom of the compactor, place cardboard (gaylord) over top of the wires and close the gates. Load unit with material designated to be compacted and or baled.
- Turn the power on.

- Push button to compress the material.
- Once the material has been compacted, push the retractor button to bring the ram back up to the top of the unit.
- Shut compactor off.
- Add more material if space allows, if full place cardboard (gaylord) on top of the material.
- Turn power back on.
- Compact again.
- Turn off power while compactor ram is still in the down area.
- Run your wire around the compacted material, and tie the wire.
- Place hooks on ram at the back of the compactor.
- Place a pallet in front of the compactor, and open the gates.
- Turn the power back on and retract the ram then remove the bale.
- Label the bale according to Transportation of Dangerous Goods.
- Weigh bale and record weight on form RF180.
- Hand in repack form to the dispatch office.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 RF180 - Repack Form

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Changing Knife Blades on the CMP Plastic Shredder

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

This procedure has been created to provide a safe and effective method for changing the knife blades on the CMP Plastic Shredder.

2.0 SCOPE

This method applies to CMP employees who are trained to work with the CMP Plastic Shredder and are permitted by management to change the blades

3.0 DEFINITIONS

CMP – Container Management Program

4.0 RESPONSIBILITIES

It is the responsibility of all Miller staff associated with CMP to understand and comply with the contents of this procedure and all safety procedures that are involved.

5.0 PROCEDURE

Note: Knives must always be changed in complete sets

- Always disconnect and lockout the main electrical power to the granulator before performing any service!
- Wait 3 minutes after shutting off power before opening the cutting chamber
- Open the enclosure doors, which will expose the screen cradles and the granulate deflector
- Rotor knives should be changed one seat at a time to prevent rotor from being rotated in an out-of–balance condition
- Check to make sure that a 0.04 mm (0.0015 inch) feeler gauge will not pass between the between the back of the new rotor knife and the knife seat.
- Use the adjustment screws to set the clearance between the rotor knife and bed knife to 0.15 mm (0.006 inch). The clearance should be measured with a

feeler gauge at the ends of the knife, by rotating the rotor sheave backwards by hand. Check both the upstroke and downstroke knife gaps.

- Rotor knife screws are tightened to a torque of 315 Nm (230 lbs ft)
- Bed knife screws are tightened to a torque of 271 Nm (200 lbs ft).
- Re-check the knife gap after applying the corresponding torque to each screws
- Cradle mounting (screen chamber) screws are tightened to a torque of 315 Nm (230 lbs ft)

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

6.2 Operators Manual 2036 TF Tangental-Feed Granulator Part No. D-36585 Bulletin No. CG2-525.2

6.2 Operators Manual Power Tech 4.5/6.8 L 4045 and 6068 Tier 2 OEM Diesel Engines OMRG 33324 Issue 16 Feb 04 (English)

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Changing Knife Blades on the MARRC Plastic Shredder

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

To provide a method safe and effective method for changing the knife blades on the MARRC Plastic Shredder.

2.0 SCOPE

This method applies to CMP employees who are trained to work with the MARRC Plastic Shredder and are permitted by management to change the blades

3.0 DEFINITIONS

CMP – Container Management Program
MARRC – Manitoba Association for Resource Recovery Corp.

4.0 RESPONSIBILITIES

It is the responsibility of all Miller staff associated with the CMP to understand and comply with the contents of this procedure for the equipment mentioned.

5.0 PROCEDURE

5.1 Removing the Old Blades

- Make sure that the machine is turned off!
- Lift hood off the motor so the shredder can be opened even more
- Undo 4 bolts in front of the shredder so it can be opened
- Pull the top up using a rope. It will require two people as it is not very easy.
- Tie the rope on a beam to keep it from falling down
- Use a socket wrench (socket size 15/16 in.) to undo 6 bolts on the bed knife and 4 bolts on the back of the 3 knives
- Note orientation and position of the bed knife and the 3 other knives

- Check that the washers are not broken and that the bolts are still good.
- Check if screen is good

5.2 Installing the New Blades

- Put in the new bed knife and the 3 sharpened knives in the same orientation as they were removed
- Make sure that the long size of the blades' tip are pointed down and the point of the bed knife is up
- Adjust bed knife as close as possible to the blades
- Torque all bolts to 120 ft lb
- Undo rope and lower top down
- Push hood down and replace 4 bolts at the front of the shredder (Torque to 120 ft lb)

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Trailer Parking Procedure at MEC

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

There are circumstances when the company may require van trailers containing regulated and non-regulated waste to over-night at the Miller Environmental Corporation (Miller) facility: e.g. inbound and outbound waste, storage of non-regulated waste. This procedure outlines location, inspection, and security guidelines that will be enforced by the operations department.

2.0 SCOPE

This procedure applies to all trailers that are to be spotted at the MEC.

3.0 DEFINITIONS

Trailers – A transport unit with either a van type container usually used to transport drums, totes and pallets or a bulk tanker type used for liquids.

Spotted – Trailer that has been moved into place, parked and then the tractor unit has been decoupled and departed.

4.0 RESPONSIBILITIES

It is the responsibility of MEC operations staff receiving trailers and tankers to follow this procedure.

5.0 PROCEDURE

5.1 Location

Trailers containing regulated waste will be parked in one of three possible locations: (see Attachment 7.1).

1. Shipping and receiving ramp (PB4).
2. Tanker apron.
3. Edge of facility's south pad.

Trailers containing non-regulated wastes may be parked anywhere on the facility property.

5.2 Inspection

Trailers will be inspected and the results of inspection documented at the start of each operating day by the operations manager, operations supervisor, or designate. Trailers will be inspected for leaking containers or spills.

5.3 Security

During non-operating hours, all van trailers will be locked with a padlock on the rear doors, and side door (if applicable).

5.4 Regulatory Considerations

1. Trailers containing regulated waste may be stored on the MEC site for not longer than 72 hours. Non-compliance must be reported to Manitoba Conservation as per License No. 58 HW S2 RR.

2. All documentation (manifests, bill of ladings etc) are kept in the MEC lab.

3. Only 4 incoming trailers and 4 outgoing trailers plus 2 tankers are allowed to contain hazardous waste for the 72 hour period on the MEC site. No more than 4 trailers containing non-hazardous waste will be allowed at any given time

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 14001:2007
6.2 License No. 58 HW S2 RR

7.0 ATTACHMENTS

7.1 MEC Site Layout Diagram

8.0 APPROVALS

Department Manager	IMS Coordinator

Powered Mobile Equipment Policy

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this policy is to provide guidance towards safe operation when using powered mobile equipment supplied by Miller Environmental Corporation (Miller).

2.0 SCOPE

This policy and procedure is applicable to all staff of Miller who operate powered mobile equipment.

3.0 POLICY

The Miller policy is to provide appropriate instruction and procedure for safe operation of all powered mobile equipment and ensure that all powered mobile equipment is operated in a safe manner.

4.0 DEFINITIONS

Powered Mobile Equipment- a self-propelled machine or combination of machines, including a prime mover or a vehicle, used to;

1. Manipulate or move material;
2. Move workers;
3. Provide a powered aerial device for workers

5.0 RESPONSIBILITIES

This policy and procedure must be followed by all Miller staff who use company powered mobile equipment.

Miller must provide training in the safe work procedures of powered mobile equipment. Miller will provide this training as per Workplace Safety and Health Regulation 217/2006 Part 22 and ensure that employees comply with those safe work procedures. Miller will also ensure that the equipment is maintained in a safe operating condition and ensure all repairs are completed in a timely manner.

Employees must participate in the training offered and apply the procedures appropriate for the particular equipment.

It is Miller's responsibility to ensure the operator's manual for powered mobile equipment is readily available to any employee who operates the equipment.

6.0 PROCEDURE

6.1 Equipment inspection

Employees are to complete a daily inspection if they are the first operator of the day for a piece of equipment and record the results in the log book provided.

Any defects or unsafe work conditions noted and recorded in these log books must be reported directly to the immediate supervisor. If the defect or unsafe condition is hazardous or may create a risk to the safety or health of a worker the equipment must be removed from service until the defect is repaired or the unsafe condition is corrected.

Miller will ensure that a written record of the inspections, repairs and maintenance carried out on the powered mobile equipment is kept at the workplace and made readily available to the operator of the equipment.

6.2 Seatbelt use

If, at the time it was manufactured or subsequently, powered mobile equipment is equipped with a seatbelt or another type of restraining device, an employer must ensure that:

1. The seat and seatbelt or restraining device are not removed; and

2. When the powered mobile equipment is in use, the operator and any other worker required or permitted to be in or on the equipment use the seats and seatbelts or other restraining devices.

7.0 REFERENCES

7.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
7.2 Workplace Safety and Health Regulation 217/2006 Part 22
7.3 Operator's Manuals
7.4 Equipment Log Books

8.0 ATTACHMENTS

9.0 APPROVALS

Department Manager	IMS Coordinator

Rich Organic Processing (Fuel Blending)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to describe the procedure for preparing a tanker load of waste that is to be shipped out to a disposal facility that utilizes the material as a fuel. A process known as fuel blending is used to prepare this waste stream. Several separate waste streams are typically blended.

2.0 SCOPE

This procedure applies when planning a tanker load of waste for shipment to a disposal facility that intends to use as an alternative fuel.

3.0 DEFINITIONS

Rich waste – Waste materials, typically non-halogenated solvents, which are characterized as having high BTU value (>10,000/lb) , low water (<5%), and low solids content.

Lean waste – Waste materials made up of mainly water, which contains solvent or other organic material that cannot be treated in a cost effective manner presently at MEC.

Sludge Waste – Solid or semi-solid material usually generated as a by-product of a chemical process or having settled out from a liquid over time.

BTU (British Thermal Units) – Measure of the heating value or content of fuel. This unit of measure is normally expressed as BTU per pound.

4.0 RESPONSIBILITIES

It is the responsibility of MEC operations personnel to follow this procedure.

5.0 PROCEDURE

Rich waste streams that are suitable to be included in a tanker of fuel blended waste are presently coded POR. This coding is assigned by the MEC laboratory technician upon performing analysis of a representative sample of the waste. See

procedure 20.30.2 Waste Verification and Sampling Procedure (MEC) for further information the coding system.

The waste must fall within a set range of values for several parameters for both optimum pricing to be achieved and to fall within the limits of the destruction facility's operating license.

5.1 Target Parameters

The destruction facility that Miller most commonly utilizes has provided a list of maximum levels for several waste characteristics and minimum levels for BTU/pound. These levels are established as a result of regulatory and processing limitations.

The parameters that must be adhered to are as follows:

- Water must be less than 30%
- Solids content must be less than 35%
- Total halogens must be less than 2%
- BTU value must be a minimum of 8,000

It is very important to note that exceeding these parameters is allowed but will result in a surcharge being applied to the entire volume of waste. A refusal of the load may ultimately occur if the waste exceeds limits or minimum BTU requirements are not met. If the surcharge is applied or the load is refused the result will be a significant cost incurred by Miller. Safety factors are to be built in while preparing a load of rich waste. These are used in the calculations to estimate the volumes of the different wastes to be added to the tanker. The general rules of thumb for safety factors are as follows:

5.2 Formulation of a Rich Load

A tanker of fuel blended waste is usually prepared in one of two ways.

A tanker containing a significant volume of rich material may arrive at the MEC directly from a customer's site and then "topped up" with lean waste, sludge and halogenated solvent from the MEC inventory.

Alternatively, the load may also be prepared "from scratch" whereby an empty tanker arrives at the MEC and the waste materials are added entirely from the MEC inventory.

Waste is added either by configuring the bulk tanks containing the waste such that the desired waste is directed into the tanker or by pumping drums or totes. Water and sludge are typically added from tanks and halogenated waste from drums (usually no more than one drum).

Regardless of which of the two above listed methods is used, the target parameters for the load should not differ.

An "ideal" load of fuel blend waste must be prepared in a manner that maximizes the water, sludge and halogens while maintaining the BTU value. The approximate volume of each waste to be added is impossible to list in a recipe format as the composition of the waste streams varies widely. For example, the more water that is present in the lean portion of the waste, the less total lean material can be added.

Currently, the most important factor in preparing a rich load is to maximize the addition of lean waste. The impact that the addition of lean waste will have on the load may be estimated by using the following calculation:

$$\% \text{ water} = \frac{\text{Quantity Lean waste (L) x water content (\%)}}{\text{Total Quantity on Tanker (x 100\%)}}$$

5.3 Quality Control and Sampling

No tanker with a rich load may leave the site until on-site analysis shows the waste to be within acceptable limits with regard to water, sludge and BTU content. The MEC technicians are responsible to gather representative samples and follow laboratory technician instructions as to nature and quantity of material to add (or remove). Further instruction for gathering and recording and storing samples can be found in 20.30.2 Waste Verification and Sampling Procedure (MEC) and 20.30.3 Sampling Outbound Tanker Waste Procedure (MEC).

6.0 REFERENCES

6.1	ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2	20.30.2 Waste Verification and Sampling Procedure (MEC)
6.3	20.30.3 Sampling Outbound Tanker Waste Procedure (MEC).

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager	IMS Coordinator

Lean Organic Waste Processing (Lean Burn)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to assist in the planning and preparation of a shipment of lean waste to an approved destruction facility.

2.0 SCOPE

This procedure applies to water based waste streams that contain dissolved organics or other chemicals. The organics cannot be separated from the water portion or otherwise treated on-site at the MEC in a cost-effective manner using current MEC equipment. As a result, the waste is transferred to the on-site tanks where ideally it will be included in a rich tanker load (see 20.80.1 Rich Organic Processing (fuel blending)) or alternatively, in a lean waste tanker load to be sent to a destruction facility.

This procedure does not cover the documentation requirements for shipping this waste. Information for this may be found in 20.20.3 Paperwork Requirements for Outgoing Waste (MEC).

3.0 DEFINITIONS

Rich waste – Waste materials, typically non-halogenated organic solvents, which are characterized by having high BTU value, low water (<5%) and low solids, content.

Lean waste – Waste materials made up of mainly water, which contain, but not limited to, dissolved or dispersed solvent such as alcohols or other polar solvents, or other organic material that cannot be treated in a cost effective manner presently at MEC.

4.0 RESPONSIBILITIES

It is the responsibility of all MEC operations staff to follow this procedure.

5.0 PROCEDURE

Lean waste is generally transferred from the originating container or a processing tank into a designated MEC bulk storage tank. The originating container may be a

drum, tote, tanker or other appropriate container used for liquid waste. The waste is then either added to a "rich" load (see 20.80.1 Rich Organic Processing (fuel blending)) or sent for destruction in a "lean" tanker, which is entirely made up of lean material.

Wastes received at the MEC, regardless of waste or container type, are sampled, analyzed and coded by MEC staff. There may be a separation process performed prior to it being directed to the bulk storage location. This is a procedure that involves gravity separation of the rich and lean portions of the waste and is performed as described in 20.80.8 Gravity Separation Treatment Procedure. The exact processing instruction is indicated on the code assigned by the lab technician. The coding is based upon the interpretation of analysis performed on a representative sample of the waste. See procedure 20.30.2 Waste Verification and Sampling Procedure (MEC) for further information on how the sample is collected and the code is established.

5.1 Priority of Disposal Options for Lean Waste

5.1.1 On-site MEC Treatment

The most effective treatment options for waste materials is usually on-site treatment at MEC. Presently there is limited treatment performed on this waste stream and as a result two options are commonly utilized.

5.1.2 Rich Tanker Load

As described in Procedure 20.80.1 Rich Organic Processing (fuel blending), the ideal option and first priority for disposal of lean waste is for it to be included in a tanker of fuel blended material. The formulation of this tanker is described within that procedure.

5.1.3 Lean Tanker Load

Alternatively, the waste material may be sent to a destruction facility as a tanker load made up entirely of lean material. The reasons that this second priority option may be necessary include times when the fuel blending facility is not accepting waste materials or the current inventory of the MEC is made up of much more lean waste (approaching storage capacity) than rich waste and therefore blending is not possible.

The operations manager must approve all tankers of lean waste being shipped for disposal.

5.2 Sampling

Sampling and analysis of the waste must take place before departure of the tanker and be in accordance with 20.30.3 Sampling of Outbound Tanker Waste Procedure (MEC)

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.20.3 Paperwork Requirements for Outgoing Waste (MEC)
6.3 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.4 20.30.3 Sampling of Outbound Tanker Waste Procedure (MEC)
6.5 20.80.1 Rich Organic Processing (fuel blending)
6.6 20.80.8 Gravity Separation Treatment Procedure

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Heavy Metal Bearing Waste Stabilization and Solidification Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this SOP is to safely and efficiently process and treat material designated for leachate metal stabilization and solidification, thus reducing the waste to a less hazardous form that conforms to landfill criteria.

2.0 SCOPE

To provide the MEC technicians and or contractors with the means to protect themselves while any transferring of dusty, toxic or corrosive materials, while treating the waste sufficiently to meet landfill regulations. Stabilization/Solidification (S/S) is a waste treatment method in which contaminants are physically bound or "complexed" within a solidified mass or chemical reactions are induced between the stabilized agent and contaminants to reduce their mobility.

This procedure describes the current methods being used for this type of process.

3.0 DEFINITIONS

- Full Face Respirator – A respirator covering your entire face that uses air-purifying cartridges.
- Half Face Respirator – A respirator covering your nose and mouth that uses air purifying cartridges.
- RPE – Respiratory Protective Equipment.
- PPE – Personal Protective Equipment
- PB1- Process building one.
- PB2 – Process building two.
- PVC gloves-Polyvinyl Chloride gloves

4.0 RESPONSIBILITIES

It is the responsibility of all MEC technicians, contractors or any individual directly associated with any of the material being transferred deemed hazardous to abide by this procedure.
It is the duty of the operations supervisor and or manager to enforce this procedure.

During any stabilization/solidification process each individual directly involved or working in proximity where hazardous conditions may involve them need the following PPE.

- Half face respirator, goggles plus PVC gloves or split leather with nitrile gloves.

These requirements are necessary without a baghouse to contain any airborne dusts, or without a scrubber for any vapour/mist emissions that could be present.
It is recommended that the PPE stated above be worn with or without the bag house being used.

Only individuals properly trained with the operation, troubleshooting and maintenance of tanks, pumps, valves and the wet/dry scrubbers shall perform the stabilization portion of this procedure.

5.0 PROCEDURE

Some waste may require particle size reduction prior to the stabilization steps explained below. Follow these steps to power on and off the hammer and conveyor located at the southeast corner of PB2. All users must read and understand the operating manuals, as well as direct training before performing this task individually.

1. Turn on the hammer mill switch/disconnect.
2. Turn on the conveyor disconnect.
3. Push the green button underneath the hammer mill to start.
4. Make sure ventilation hoses are all hooked up.
5. Make sure collection container (hopper or drum) is secured under the hammer mill.
6. Press forward on conveyor control – set at 35 to 40 Hz.
7. Turn on vibrator – set at 15 to 20.
8. Slowly add material requiring particle size reduction to the hopper using the forklift equipped with a tipper.
9. Monitor the conveyor and ensure contaminants such as pure metals are not allowed to reach the hammers.

10. When hopper gets full remove and weigh.
11. Subtract the tare weight of the hopper from the final weight and record the weight of the waste on the decant sheet.
12. When complete turn off vibrator, conveyor, hammer mill and turn off breakers.
13. Ensure the area is kept neat and swept regularly.

Some operations in PB2 require the use of a dust collector. These include the loading of cement trucks, hammer mill, and mixer. Follow these steps to power on and off the dust collector located at the southeast corner of PB2. All users must read and understand the operating manuals, as well as direct training before performing this task individually.

1. Turn on the compressor by turning off the emergency switch, turning the breaker on, and pressing the green switch on the compressor.
2. Turn on the dust collector by turning the fan and cleaning run on.
3. Setting for fan is “Hand”. Setting for cleaning is “continuous”.
4. Turn off the compressor by turning the emergency switch on and turning off the breaker.
5. Turn off the dust collector by turning the fan and cleaning run off.
6. To clean the unit leave the cleaning run on for 1 hour.
7. Ensure the area is kept neat and swept regularly.

2 mixing units can be used for this procedure:

1. Rotary mixer (cement truck)
2. Roll off bin

This procedure involves three phases.

1. The loading of the mixing unit, which takes place in PB1 or PB2 depending on the mixing unit being used.
2. The waste water/acid processing stage which currently must take place in PB1.
3. The solidification stage, which may take place in either building, again depending on the mixing unit being used.

Cement Truck Application

The cement truck is loaded in PB2 using a forklift, hopper and auger. A baghouse (Wheelabrator Dustube Collector) is employed to manage the dust from the hopper and the cement truck drum opening. Dust is collected under the baghouse in 50 L drums and added to the batch as required. A skirt that is

attached at the end of the auger is also used to minimize dust and ensure product flows freely from the auger into the cement truck drum. During the stabilization process in PB1 the diesel fumes are exhausted outside the building and acid vapors are controlled using a wet scrubber. Wastewater is pumped from the tanks using a 3" pump and a 2" line. Acid is pumped from drums using a 1" pump and 1" line. Only technicians properly trained with the operation, troubleshooting and maintenance of tanks, pumps and valves shall perform the stabilization portion of this procedure.

PB2 - Loading The Cement Truck

1. Back cement truck into position so that the auger extension and baghouse hose can be attached to or put into cement truck drum opening.
2. Put on designated RPE and PPE.
3. Turn bag house on.
4. Using a forklift dump 3 tonnes of heavy metal bearing waste into the hopper, scraping the sides to ensure all product is transferred by the auger into the cement truck drum.
5. Shut off auger.
6. Separate skirt and exhaust from cement truck drum opening and drive the truck to process building 1.

PB1 - Stabilization

1. Back the truck into PB1 and attach the exhaust to the cement trucks and the wet scrubber hose over the cement truck drum opening.
2. Add a sufficient amount of wastewater and mix truck.
3. Allow the slurry to mix for 10 minutes before adding the acid.
4. Add necessary pH buffering reagents. Preparation of the reagent should be done before truck has arrived.

Note: If acid is being added, high amounts of heat and smoke may be generated. The temperature of the mixing drum should be monitored closely. Pumping of the acid should be stopped if drum temperature exceeds 90^{o}C or excess acid vapors are visibly escaping the scrubber hose. Cold water should be used to cool the drum. Processing can resume when the temperature is lowered or the acid vapors are controlled.

5. Sample the slurry and have the lab test it.
6. If sample passes, proceed to the solidification stage. If sample does not meet the requirements add additional volume of reagent to correct.
7. Remove hoses off cement truck and proceed to PB2 with truck.

PB2 – Solidification

1. Dump the contents of the mixing drum into a roll off bin.
2. Depending on the suspected components in the bin, a sufficient amount of reagent(s) are added to the bin, as coordinated by the laboratory.
3. Take a sample to the lab for analysis.
4. **If needed t**he roll off bin may be solidified with Liquid Waste Solidifier (LWS) once bin is full (2 cement truck loads).
5. Batch sheet should be filled out as process is going on. Track all new reagents as well as all waste products put into the mix.
6. Once the roll of bin has been solidified thoroughly a sample is taken and sent to an accredited lab for landfill requirement testing. If all parameters meet the requirements the roll off bin is transferred to an end dump truck and sent to the appropriate landfill.

Roll Off Bin Application

This application is performed entirely in PB1. A maneuverable tarp/fume extraction apparatus is placed over a roll off bin and is employed to control vapors produced while mixing the bin during stabilization. A backhoe is brought inside PB1 for mixing the bin. All organic processing in PB1 is shut down for the duration of the mixing process.

Note: Incompatibilities for this application include: oxidizers, and all organic materials(including cardboard, paper, etc.)

1. Add heavy metal bearing waste as profiled, and coordinated by the MEC laboratory to the roll off bin. This waste comes in a wide range of vessels, which may include drums, IBC bags, pails, etc. Proper respiratory protection is mandatory for this stage of the process.
2. Wastewater is then pumped into the roll off bin to create a free flowing slurry.
3. Using the backhoe, mix the contents into slurry for approximately ½ hour.
4. Depending on the suspected components in the bin, a sufficient amount of reagent(s) are added to the bin, as coordinated by the laboratory.
5. Take a sample to the lab for analysis.
6. If the bin waste meets acceptable criteria, the bin can now be solidified.
7. If needed, add sufficient Liquid Waste Solidifier to solidify slurry.
8. Take a sample and send it to an accredited lab for landfill requirement testing. If all parameters meet the requirements the roll off bin is transferred to an end dump truck and sent to the appropriate landfill.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 SOP 20.30.2 Waste Verification And Sampling Procedure
6.3 SOP 20.80.5 Inorganic Physical Chemical Treatment Procedure

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Inorganic Physical Chemical Treatment Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Waste received or generated at the MEC is treated on-site where capabilities exist and the treatment proves cost effective. This procedure describes the series of steps that are taken in order to treat inorganic water based wastes that have been determined as being suitable for in-house treatment.

The objective of this treatment is to chemically alter the waste and then separate into two non-hazardous end products, or in some cases a large volume non-hazardous product, plus a small volume hazardous product. The two desired end products are water, which can be disposed of through internal processing or a water treatment plant, and non-hazardous or hazardous solids, which after solidification/stabilization processing (see 20.80.3 Heavy Metal Bearing Waste Stabilization and Solidification Procedure), are tested and sent for landfill disposal.

2.0 SCOPE

This procedure applies to wastes that are aqueous solutions, are acidic, basic or neutral and can contain heavy metals. They have been identified by laboratory analysis, prior experience with these materials and bench scale. It is important to note that no exact “recipe” exists for this treatment as the composition of the waste materials varies.

3.0 DEFINITIONS

PPE – Personal Protective Equipment
PB1 – Process building 1, for treatment and processing of liquid industrial hazardous waste.
PB2 – Process building 2, for stabilization and solidification of solid hazardous waste.
PB3 – Process building 3, housing separation technologies and tanks. No hazardous waste can be stored or processed in this building.
Rinseate – the subsequent aqueous portion of the treated wastewater once the solid hazardous components have been removed.

4.0 RESPONSIBILITIES

All staff at the MEC assigned to the processing facility and laboratory are required to follow this procedure.

5.0 PROCEDURE

5.1 Discussion of Treatment Technology

The composition of wastes treated by physical chemical means varies and as such no single method to treat it exists. The wastes included in this treatment are typically acidic, basic or neutral, are water based and commonly contain metals. Metals can be removed from wastewater streams using a variety of chemical reagents and separation techniques.

5.2 Preparation

The first step in any treatment process is to determine that there is waste of the desired type in sufficient quantity to treat. Generally, a minimum quantity of inorganic waste that is required for initiation of a batch is 1,000 L. The main reasons for this are the setup time and lab analysis involved in running a batch.

The next step is to physically move the waste containers close to the inorganic waste treatment area. The waste should be staged such that it is within easy access but does not block aisle ways or interfere with other processing activities.

The equipment listed in sections 5.3 and 5.4 of this procedure must then either be physically gathered or checked to ensure that they are available for use. For example, the necessary tanks for use in the processing must be checked to ensure that they are empty and clean or if not empty, the waste contained is compatible with the materials to be transferred and the reagents to be added.

Paperwork regarding the transfer of waste must be completed at all steps where required. A detailed description of these requirements is included in a separate procedure (20.20.1 Waste Tracking Data Entry Procedure (MEC)).

5.3 Safety Considerations and PPE

In addition to the minimum PPE that is required at all times in the processing area (glasses, safety boots and hardhats) the following additional equipment is necessary during the some steps of this treatment procedure, especially during liquid transfers.

- Rain suit (coat and pants) or ¾ length rain jacket

- Rubber boots
- PVC gloves
- Half-face respirator with yellow (acid vapor) cartridge and dust filter
- Splash goggles

NOTE:
It is of the utmost importance that all activities within this process are completely understood by all technicians involved. All parts of this process should be coordinated through the lab. No containers should be allocated to this process without the lab first profiling the waste. There is a potential for extremely dangerous conditions if this process is not followed correctly. Communication between the lab and technicians is imperative. If at any time a technician questions part of the batch process, stop and talk to the lab about the concerns. This SOP does not encompass the operation and maintenance of the equipment required. Refer to the user manuals for the processing equipment.

5.4 Processing Equipment and Supplies Necessary

- Inorganic mixing tank (10,000 L)
- Stainless steel mixing tank (2,500 L)
- 1" and 2" pumps
- Chemical hoses
- Water hose (charged)
- 3" inorganic chemical pump
- 3" chemical hose
- 2" chemical lines
- Proprietary Metal Precipitating agent*
- Sodium Hydroxide Reagent*
- Sulfuric Acid Reagent*
- Aluminum Potassium Sulfate Reagent*
- Filter press
- 1,000 L clean totes (quantity required varies)
- Water recovery tanks

* - Waste material should be used as reagent where possible. The lab must approve use, quantities to add and method of addition (i.e. strong reagents may need to be added slowly).

5.5 Initial Transfer of Waste

The first step in this waste treatment is the transfer of waste into a tank that is suitable for chemical reactions. This is best performed in tank 11, which is a 2,500 L stainless steel tank (reactor vessel) that is resistant to corrosive and reactive materials, but can also be performed in tanks 1 or 2 which are 10,000L poly mixing tanks if authorized by the lab to do so. Prior to treatment, the initial waste must be transferred from the original container, usually a drum or tote, to tank 1,2 or 11.

5.6 Treatment Process

The laboratory staff will determine the steps involved for each batch of wastewater to processed. The process is completely dependant on the type of wastewaters to be treated by this method. No process will commence until an exact recipe has been determined by the laboratory staff. MEC technicians performing this process will bring samples and consult with the laboratory staff until the laboratory staff has determined that the treatment process is complete.

5.7 Separation Process

Once the wastewaters have been treated such that the hazardous components can be removed from the water, the batch will be transferred through 1 of the filter presses located in PB3. The solids are captured by the filter press, and the rinseate can be moved into any of the tanks located in PB1 or PB3. The laboratory staff will test the rinseate to determine if further treatment is required.

The rinseate generated from this process will either be used internally as a clean water source in other processes, or sent for disposal. The sludges generated from this process are either sent for recycling, or transferred to PB2 for stabilization and solidification prior to landfill disposal.

Note:
MEC Technicians performing this process must be fully trained on the operation of the pumps, valves, tanks and filter presses. User manuals for all equipment used for this process are readily available for consultation.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.20.1 Waste Tracking Data Entry Procedure (MEC)
6.3 20.30.2 Waste Verification and Sampling Procedure (MEC)

6.4 20.80.3 Heave Metal Bearing Waste Stabilization and Solidification Procedure

7.0 ATTACHMENTS

None

8.0 APPROVALS

Department Manager	IMS Coordinator

Inorganic Physical Chemical Treatment – Potassium Permanganate Solution

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Waste received or generated at the MEC is treated on-site where capabilities exist and the treatment proves cost effective. This procedure describes the series of steps that are taken in order to treat inorganic water based Potassium Permanganate wastes that have been determined as being suitable for in-house treatment.

The objective of this treatment is to chemically alter the waste through the addition of reagents and then separate into two non-hazardous end products. The two desired end products are water, which can be disposed of through a water treatment plant, and non-hazardous solids, which after solidification/stabilization processing (see 20.80.3 Heavy Metal Bearing Waste Stabilization and Solidification Procedure), are tested and sent to an approved disposal site.

2.0 SCOPE

This procedure applies to wastes that are aqueous solutions of Potassium Permanganate and have been identified by laboratory analysis, prior experience with these materials and bench scale experiments to be suitable for physical chemical inorganic treatment at the MEC. The Potassium Permanganate waste stream is toxic, corrosive (basic) and has a strong oxidizing potential. It is important to note that no exact “recipe” exists for this treatment as the composition of the waste materials varies.

3.0 DEFINITIONS

Reduction-Oxidation (redox) – Chemical reactions that results in the transfer of electrons from one compound to another.

Corrosive (alkaline) – As defined by the TDG regulations as a material that has a pH of greater than 12.5 or causes damage to human tissue or some metals.

PPE – Personal Protective Equipment

Non-hazardous – Material that does not exhibit characteristics, such as flammable, toxic, corrosive, reactive or contain specific leachable material and therefore does not meet criteria for inclusion as a regulated material as defined by the Transportation of Dangerous Goods Regulations.

4.0 RESPONSIBILITIES

All staff at the MEC assigned to the processing facility and laboratory are required to follow this procedure.

5.0 PROCEDURE

5.1 Discussion of Treatment Technology

Potassium Permanganate is a toxic, corrosive and oxidizing material. The steps taken to treat this waste involve a systematic "neutralization" of each of these properties. A brief note on the chemical reactions involved is included each time a reagent is added during the treatment process.

5.2 Preparation

The first step in any treatment process is to determine that there is waste of the desired type in sufficient quantity to treat. A minimum quantity of Potassium Permanganate waste that can be cost effectively treated in a batch is 1,000 L. The reasons include the setup time and lab analysis involved in running a batch.

The next step is to physically move the waste containers close to the inorganic waste treatment area. The waste should be staged such that it is within easy access but does not block aisle ways or interfere with other processing activities.

The equipment listed in sections 5.3 and 5.4 of this procedure must then either be physically gathered or checked to ensure that they are available for use. For example, the necessary tanks for use in the processing must be checked to ensure that they are empty and clean. If the tank is not empty, the waste contained must be compatible with the materials to be transferred and the reagents to be added.

Paperwork regarding the transfer of waste must be completed at all steps where required. A detailed description of these requirements is included in a separate procedure (20.20.1 Waste Tracking Procedure (MEC)).

5.3 Safety Considerations and PPE

In addition to the minimum PPE that is required at all times in the processing area (glasses, safety boots and hardhats) the following additional equipment is

necessary during the steps of this treatment procedure especially during liquid transfers.

- Rain suit (coat and pants) or ¾ length rain jacket
- Rubber boots
- PVC gloves
- Half-face respirator with yellow (acid vapor) cartridge and dust filter
- Splash goggles

5.4 Processing Equipment and Supplies Necessary

- Inorganic treatment tank (10,000 L)
- Stainless steel tank (2,500 L)
- 1" stainless steel pump and air line
- Two 1" chemical lines
- Water hose (charged)
- 3" Inorganic chemical pump
- One 3" chemical hose
- 4" Inorganic transfer pump
- Two 2" chemical lines
- Sodium Metabisulfite Reagent* (or other suitable reducing agent)
- Proprietary Metal complexing/Precipitating agent
- Sodium Hydroxide Reagent*
- Sulfuric Acid Reagent*
- Aluminum Potassium Sulfate Reagent (alum)*
- Drums Dilute Sulfuric Acid Waste
- 1,000 L clean totes (quantity required varies)
- Water recovery tank (35,000 L)
- 250 ml sample jars
- Tanker dipstick

* Waste material should be used as reagent where possible. The lab must approve use, quantities to add and method of addition (i.e. strong reagents may need to be added slowly while mixing).

5.5 Transfer of Potassium Permanganate Solution

The first step in this waste treatment is the transfer of waste into a tank that is suitable for chemical reactions. This is best performed in tank 11, which is a 2,500 L stainless steel tank (reactor vessel) that is resistant to corrosive and reactive materials. Prior to treatment, the waste must be transferred from the original container, usually a drum or tote, to tank 11. The transfer can be

accomplished by utilizing the 1inch stainless steel pump and associated equipment in the following manner:

1. Connect the 1" stainless pump to the reactor vessel (tank 11) using the 1" hose.
2. Attach a stainless transfer wand to the receiving end of hose and ensure connections are locked in place.
3. Ensure the vent to the wet scrubber on top of Tank 11 is open and the scrubber is operating.
4. Check the flow of air through the tank's vent (use your hand, it should be drawing a considerable volume of air).
5. Attach airline to the 1" pump.
6. Chemical splash goggles, gloves, rubber boots and the rain suit must be donned at this point.
7. Once the scrubber arm is placed over the opening in the drum/tote, the container may be opened.
8. Place the wand into the container and begin the transfer to the tank at a moderate speed. Turn the valve halfway between the off and full positions to achieve this speed.
9. Connect the air mixer on the tank and adjust it to produce a controlled mixing effect without cavitation.
10. Once the transfer is complete, a 250 ml sample is to be drawn from the hatch opening on top of the tank and submitted to lab. Use a tanker dipstick for this task. Procedure 20.30.2 describes sampling procedures in more detail.
11. The half-face respirator is to be donned while sampling and the top hatch is open.
12. Flush the 1" line with a 20 L pail of water from the water hose.
13. Lab will provide verification of the waste as well as direction for the quantity and reagents to use in the treatment.

5.6 pH Adjustment Step

There should be a minimum 1000 L of waste Potassium Permanganate in Tank 11 at this point. The next step is the adjustment of the pH from approximately 14 down to between the 8 to 10 range. This step is performed in order to precipitate metals and to prepare the product for the chemical reduction stage. The pH adjustment is accomplished by the addition of acid. Ideally, waste acid should be used for this step in order to avoid costs associated with both purchasing reagent and treating acid waste. As previously mentioned, the laboratory technician must approve materials that are to be utilized in treatment processes as reagents. The steps to follow in order to adjust the pH of the batch are as follows:

1. Add the lab approved acid reagent to the reactor vessel (Tank 11) in the same manner and using the same pumping equipment, after rinsing, as was

done for the transfer of waste Potassium Permanganate in section 6.5 of this procedure.

2. As the acid is being added, the pH and the liquid level of the tank should be monitored.
3. The tank level is monitored visually through the top hatch.
4. pH can be measured by dipping pH paper into the sample collected in the 250 ml jar.
5. The quantity of the acid needed to adjust the pH to the desired level will vary depending on the strength of the reagent acid used. The pH should be checked once for every 200 L of reagent added.
6. If the available space in the tank becomes limiting, stronger acid reagent should be used. Typically a 50% by weight acid can be utilized. The lab technician should directly monitor the progress of the chemical reaction at this stage.
7. Once the desired pH has been reached (between 8 to 10), the material is ready to be chemically reduced by the addition of a reducing agent.

5.7 Reducing Agent Addition and Transfer of Reduced Waste

In order to reduce the material prior to further processing, a suitable reagent is added. Sodium Metabisulfite is typically utilized. The laboratory technician must approve both the reagent and the quantity that is to be added in this stage of the processing.

1. A half-face respirator in addition to the PPE used in Step 6 of Section 5.5 must be used for this stage.
2. Slowly add one 20 L pail of Sodium Metabisulfite powder to the liquid by pouring it into the top hatch of Tank 11.
3. Allow the waste to mix for 15 minutes while keeping the lab informed during any addition of reagent.
4. Draw a sample and submit to lab for confirmation that the waste has been sufficiently reduced.
5. Upon receiving confirmation from lab, the material may be transferred into a larger tank (10,000 L tank) in the inorganic line for further processing.
6. Attach a 3” inorganic line from the bottom valve on the reactor vessel (tank 11) to the intake line on a 3” pump.
7. Configure the valves so that the 3” pump will move the liquid from tank 11 to the desired tank.
8. Double check the valves to ensure that there are no unwanted open valves that will cause some of the liquid to be directed to the wrong line.
9. Turn on the pump and run at full speed until all the liquid has been transferred.

10. This material may be mixed by turning on the tank mixer in tanks 1 and 3 or by turning on the air valves on tank 2. This mixing can continue as subsequent batches are being prepared in the reactor vessel.
11. Once 2,000 L of waste has been transferred, the pH probe can be inserted in the tank.
12. Once sufficient waste (up to 9,000 L) has been transferred into the 10,000 L tank, the addition of metal precipitating agent (described in Section 5.8) may be performed.
13. Rinse Tank 11 with hot water using the water hose while pumping in order to clean out tank. This contaminated water can be pumped to the 10,000 L tank containing the reduced Potassium Permanganate waste.

5.8 Addition of Metal Precipitating Agent

A proprietary reagent is added to the water, which causes metals to further precipitate from solution and prepare the waste for the addition of Alum (coagulation stage). This reagent is first diluted prior to addition to the 10,000 L tank containing the waste.

1. Prepare a batch of metal precipitating reagent by adding 20 L of new reagent to a clean empty drum located near the reagent pump (see attachment).
2. Fill the drum with hot water (approximately 180 L) from the water hose.
3. Mix the batch by using the portable air mixer.
4. Attach a transfer wand to one end of a 2" line and attach the other end to the intake line of a 3" chemical pump (requires use of adapter).
5. Ensure the valves are configured in order to lead to the 10,000 L that contains the waste.
6. Pump the entire 200 L of prepared reagent into the tank and mix in the same manner as step 10 in Section 5.7.
7. Obtain a sample by opening one of the sample ports located on the tank and submit to lab.
8. Receive direction from lab before processing this waste further.

5.9 Addition of Alum (Aluminum Potassium Sulfate)

Depending on the original nature of the waste, the addition of Alum may not be necessary. Alum, or Aluminum Potassium Sulfate, is a material that clarifies the water portion of the waste stream by causing precipitates to settle into the sludge phase of the waste at the bottom of the tank. As is the case for the metal precipitating reagent, the Alum is first diluted in a 200 L drum and then transferred into the 10,000 L tank.

1. Prepare a batch of Alum by adding 3 L of Alum crystals to the empty drum labeled "Alum" located near the reagent pump (see attachment).

2. Add approximately 200 L of hot water from the hose.
3. Mix the batch by using the portable air mixer.
4. Attach a transfer wand to one end of a 2" line and attach the other end to the intake line of a 3" chemical pump (requires use of adapter).
5. Ensure the valves are configured in order to lead to the 10,000 L tank that contains the waste.
6. Pump the entire 200 L of diluted Alum into the tank ensuring tank mixer is on.
7. Obtain a sample by opening one of the sample ports located on the tank and submit to lab.
8. Receive direction from lab before proceeding to the separation step.

5.10 Separation of End Products

The waste has now been successfully separated within the tank into the desired end products specifically, water and sludge. The water will be pumped into tank 7 and later utilized either in-house for a different treatment process or sent to a local water treatment plant. The sludge will be pumped into totes or a bin and treated in a solidification/stabilization process in-house and then sent to an approved disposal site.

1. The 2 1/2" port located just above the cone on the 10,000 L tank (see attachment) can be used to transfer the cleared water. This water layer will sit on top of the sludge layer within the tank.
2. Transfer the water out of the waste tank by configuring the valves so that the waste is routed from the 10,000 L tank's port to the plant's 35,000 L wastewater tank (Tank 7).
3. Double check the valves to ensure that no waste will be misdirected.
4. Turn the pump on full until the layer of water has completely transferred.
5. Pump the remaining material in the tank (sludge and water), into totes.
6. For sludge pumping, configure the valves so that the bottom valve on the tank is utilized.
7. One or both air mixers on the tank may be activated in order to assist in sludge removal.
8. Pump the sludge into totes or directly into a solidification/stabilization bin if one is being prepared for treatment at that time.
9. Ensure that a sufficient number of receiving containers, if using totes, are present to contain the entire volume of sludge being pumped out of the tank.
10. Once the sludge has been pumped from the tank, the tank may be rinsed by using the water hose (hot water) and spraying the inside of the tank.
11. This wastewater can be pumped into the container that is being used for sludge.
12. The tank is now ready for use in a new batch.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.3 20.20.1 Waste Tracking Procedure (MEC)
6.4 20.80.3 Heavy Metal Bearing Waste Stabilization and Solidification Procedure

7.0 ATTACHMENTS

7.1 Picture of inorganic treatment area

8.0 APPROVALS

Department Manager

IMS Coordinator

Empty Container Procedure (MEC)

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to define the methods of cleaning, handling, reusing or disposal of empty containers of hazardous waste.

Containers (especially drums and totes) of waste that have had the contents removed at the MEC or are empty upon arrival may, after cleaning, be suitable for reuse. There are typically four options when dealing with empty containers. They may be reused without further cleaning by Miller or our customers, sent to a drum cleaning facility, sent to a metal recycling facility or sent for disposal at a landfill.

2.0 SCOPE

This procedure covers all containers that are processed and forwarded from the MEC for reuse, cleaning, recycling or disposal.

3.0 POLICY

Miller Environmental Corporation (Miller) will strive to manage all empty containers in an environmentally responsible manner, which will incorporate reuse and recycling wherever possible. Miller will further strive to provide customers with recycled containers, which meet or exceed their acceptance criteria.

4.0 DEFINITIONS

Clean container – A container (drum, tote or pail) that is in good physical condition, contains no residual materials (including odors), and is suitable for immediate reuse by Miller or by a customer.

Reusable container – A container (drum, tote or pail) that has been emptied of most (e.g. <1" residual material in a drum) of the contents and can either be reused by Miller or a customer for compatible material or sent to a commercial drum cleaner before being reused. These containers may give off vapors upon opening.

5.0 RESPONSIBILITIES

All staff at the MEC that process waste are responsible to follow this procedure.

6.0 PROCEDURE

6.1 Methods of Cleaning or Disposal of Containers

Containers that have been used to contain waste are sometimes suitable for reuse once emptied of their original contents. The MEC has limited drum cleaning equipment and therefore only simple cleaning procedures as described below can be done at present. If clean containers are required by customer service or by the customer and the container cannot be cleaned sufficiently at the MEC, the container may be sent to a commercial facility for cleaning or new drums purchased.

Drums and totes are the most common types of containers reused by Miller. Pails that have been used as labpacks are also reused but usually do not require cleaning.

Drums that can be reused include open top (205 L and overpacks) and bung type drums. These containers are either metal or plastic and are cleaned at the MEC either by rinsing with hot water, scraping with hand tools or other simple means of removing of the residues. Refer to Section 6.3 of this procedure for more information on cleaning.

Totes are typically utilized to contain liquids and/or sludge. They must be pumped out as completely as possible and rinsed before being reused. If residue remains, rinsing with hot water while pumping is performed in order to dissolve and remove the residue. If this fails to sufficiently clean out the tote, the top is cut off with an air chisel and the remaining material shoveled out. The tote is then sent to landfill.

The tops are cut off bung drums that cannot be cleaned. An air chisel is typically used to remove tops from bung drums. Once the top is removed, these drums are then scraped out and the drums sent for recycling (if metal) or to the landfill (if plastic).

An open top drum must **never** be sent to customer service or to a customer's site if it contains vermiculite (especially where contaminated) or other easily removed materials.

A closed top drum must never be sent to customer service or to a customer's site if it contains greater than 1" of residue or is in poor physical condition.

All labelling must be removed or obliterated (e.g. spray painted) prior to either reuse or disposal.

6.2 Inspection and Labelling of Clean and Reusable Containers

MEC technicians are to inspect all containers being sent to customer service to ensure that they are cleaned to the maximum extent possible given the current equipment at the MEC.

The containers are to be labelled as “Clean” if they are completely empty, are in good physical condition and will not give off vapors or odors when opened. “Clean” labels are located in the dispatch office.

No labels are to be used on the reusable (but not clean) containers. This will indicate that while the container is reusable, it is not to be considered clean.

If the container is not reusable it must not be sent to customer service.

6.3 Summary of Methods for Processing Reusable Containers

The list below summarizes cleaning methods for common types of containers that have been deemed reusable specifically, the container is in good shape and most of the contents can be removed by relatively simple means.

Container Type	Use	Cleaning Method	Destination
Open Top Drums	Labpack or Debris	Remove all vermiculite and other material	Reused by MEC or Customer Service
Open Top Drums	Inorganic bulk	Empty/scrape out contents, rinse out with hot water	Reused by MEC or Customer Service
Open Top Drums	Organic bulk	Empty/scrape out contents	Reused by MEC or Customer Service
Bung Drums	Inorganic	Rinse out with hot water	Reused by MEC or Customer Service
Bung Drums	Organic	Pump out as completely as possible	Reused by MEC or Customer Service

Totes	All	Rinse out with hot water	Reused by MEC or Customer Service

6.4 Summary of Methods for Processing and Disposal of Non-reusable Containers

The list below summarizes cleaning and disposal methods for containers that are emptied at MEC but are **not** suitable for reuse. Reasons for this include the contents not being removable without cutting the top of the container or the container being too damaged for reuse.

Container Type	Use	Cleaning Method	Destination
Open Top	All	Empty/scrape contents out as much as possible, (rinse if used for inorganics)	Metal are recycled, plastic are landfilled
Bung Drums	All	Dehead drum, scrape out contents	Metal are recycled, plastic are landfilled
Totes	All	Cut off top with air chisel and shovel contents into drum	Sent to landfill

7.0 REFERENCES

7.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

8.0 ATTACHMENTS

9.0 APPROVALS

Department Manager

IMS Coordinator

Gravity Separation Treatment Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Waste received or generated at the MEC is treated on-site where capabilities exist and the treatment proves cost effective. This procedure describes the series of steps that are taken in order to separate a waste suitable for this type of treatment into two components. The two wastes, once separated, are then treated as appropriate individually.

2.0 SCOPE

This procedure applies to wastes that are typically mixtures of aqueous and organic materials where the organic portion is not miscible in the water. The waste is identified by laboratory analysis, prior experience with these materials and bench scale experiments to be suitable for separation treatment at the MEC. The processing codes assigned to organic materials to be treated at the MEC are POR/L, and POO/W. Solvent/water, antifreeze/oil and oil/water mixtures are the three common wastes that are gravity separated at the MEC.

3.0 DEFINITIONS

Miscible - A material is said to be miscible in another material if it will readily mix and remain in solution when added to the other material.

4.0 RESPONSIBILITIES

All staff at the MEC assigned to the processing facility and laboratory are required to follow this procedure.

5.0 PROCEDURE

5.1 Discussion of Treatment Technology

The variety of wastes treated by gravity separation at the MEC is relatively limited. Generally they are comprised of water or antifreeze that has been mixed or contaminated with an immiscible organic solvent or oil. The materials that are included for this type of treatment will separate and form distinct layers or phases if allowed to settle.

5.2 Preparation

The first step in any treatment process is to determine that there is sufficient quantity of the desired type of waste to treat. Generally, gravity separation is an ongoing treatment process that takes place in tanks 4, 6 or 12. Typically there is a minimum quantity of 5,000 L of waste required for initiation of a batch although smaller quantities are commonly treated.

The next step is to physically move the waste containers close to the organic waste treatment area. The waste should be staged such that it is within easy access but does not block aisle ways or interfere with other processing activities.

The equipment listed in sections 6.3 and 6.4 of this procedure must then either be physically gathered or checked to ensure that they are available for use. For example, the necessary tanks for use in the processing must be checked to ensure that they are empty and clean or if not empty, the waste contained is compatible and is to undergo the same treatment with the materials to be transferred.

Paperwork regarding the transfer of waste must be completed at all steps where required. A detailed description of these requirements is included in separate procedures (20.20.1 Waste Tracking Procedure (MEC) and 20.20.7 Paperwork Requirements for Bulk Waste Transfers (MEC)).

5.3 Safety Considerations and PPE

In addition to the minimum PPE that is required at all times in the processing area (glasses, safety boots and hardhats) additional equipment appropriate to the waste being transferred may be necessary during the some steps of this treatment procedure. This is especially the case during liquid transfers.

5.4 Processing Equipment and Supplies Necessary

- treatment tank
- tank space or totes of sufficient volume for each separated product
- organic chemical pump
- Water recovery tank (35,000 L) if applicable
- 250 ml sample jars
- tanker sample dipstick

5.5 Initial Transfer of Waste into Tank

The first step in this waste treatment is the transfer of waste into a tank that is assigned by the lab or MEC technicians for gravity separation for this type of material.

The initial transfer can be accomplished by utilizing an organic pump and associated equipment in the following manner:

1. Configure the pump lines to direct the waste to the desired tank.
2. If the waste is in drums or totes, attach a stainless steel transfer wand to the receiving end of hose and ensure connections are locked in place.
3. Ensure the dry scrubber is operating and that the levels shown on the recorder readout for current levels are less than 300 ppm (see 20.50.1 VOC Emission Control Management Procedure for direction on the operation of dry scrubber system during pumping operations).
4. Depending on the nature of the material being transferred, check the scrubber readout in the control room every 15 minutes while pumping is occurring.
5. Any additional PPE required must be donned at this point.
6. Place the scrubber arm over the opening in the drum/tote and open the container.
7. Place the wand into a container of waste and begin the transfer to the tank at desired speed.
8. Once the transfer of all waste is complete the wastes can be left for a period of time to allow the two phases to separate.

5.6 Separation of End Products

The product is now left to gravity separate. No reagents are typically necessary unless as directed by the lab technician. The time required is not normally longer than several hours for separation to occur.

Once the allotted time has passed and the products are successfully separated within the tank, they must be pumped into separate tanks. The following is an example of one method of pumping two phases of a waste which has been separated in a 10,000 L organic tank (tank 6 is used for this example). For the purposes of this example, antifreeze and oil mixture will be used.

The tank involved has a conical bottom portion (cone) that holds approximately 1,500 L of liquid. There are two sample ports on the tank that are utilized in the separation process. One port is located just above the cone (1,500 L mark) and the other is

located approximately halfway up the tank (6,000 L mark). A general series of steps for separation follows:

1. Once the waste has been separated into two phases, take a sample from the port just above the cone and one from the port halfway up the tank in order to find the approximate phase separation point.
2. If the lower port's sample consists of antifreeze (in this example), then it can be assumed that all material (1,500 L) below the port (cone) will contain antifreeze due to it being the denser of the two products.
3. Configure the existing piping so that the bottom valve on the tank is utilized. The antifreeze can be pumped into the tank containing lean waste as directed by the lab technician.
4. The waste can be then re-sampled to try to determine the current point of phase separation.
5. If the sample at the port above the cone is oil, then all of the material above this point can be assumed to be oil and pumped into an oil tank.
6. Configure the valves to draw waste from the tank line located just above the cone and pump as much waste as possible from this line into the desired oil tank (usually tank 8).
7. The material, which should now be approximately 1,500 L of mixed oil and antifreeze, can be pumped from the bottom valve of the tank. The pumping of this residual antifreeze can be monitored visually until the oil layer is encountered.
8. The remaining oil can then be pumped into the oil tank.
9. The tank is now ready to be reused.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 20.20.1 Waste Tracking Procedure (MEC)
6.3 20.20.7 Paperwork Requirements for Bulk Waste transfers (MEC)
6.4 20.30.2 Waste Verification and Sampling Procedure (MEC)
6.5 20.50.1 VOC Emission Control Management Procedure

7.0 ATTACHMENTS

7.1 Picture of Tank 6 Illustrating Sample Ports.

8.0 APPROVALS

Department Manager

IMS Coordinator

Aerosols Processing Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to provide instruction on the operation of the MEC aerosol can processing equipment.

2.0 SCOPE

This procedure applies to the process of puncturing and draining aerosol cans at the MEC. Cans received from householders comprise the bulk of the waste but commercial customer's waste is also processed in this manner. This procedure is not conducted on compressed gas cylinders.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

All staff at the MEC assigned the task of processing aerosol cans are required to follow this procedure.

5.0 PROCEDURE

5.1 Discussion of Equipment

The equipment used to puncture and drain aerosol cans is shown in attachment 7.1. Basically it is a sealed system that first punctures the can and then causes the contents to be drained into the attached 205 L bung drum. All varieties of aerosols may be drained in this manner and as a result, waste compatibility must be considered. Once full, the drum of drained waste is coded and handled as per the usual treatment for that particular waste stream.

Presently the segregation of waste is based on compatibility of waste types contained within the cans. Pesticide aerosols are segregated from other wastes. Spray paint and similar or compatible materials are combined and depending on quantity and nature, acids and alkalis are segregated into their respective drums.

5.2 Preparation

The first step in the treatment process is to determine that there is waste of the desired type in sufficient quantity to treat. Generally, aerosol cans received may be processed in relatively small batches on a once-a-week basis but there may be cases where larger volumes are received from brokers where a few days are required to process the waste.

The area that is presently used for aerosol processing is to the right of the rack on the west wall of the transfer station. There is a carbon scrubber in this area and this must be utilized while processing cans in order to scrub the organic vapors that are generated during processing.

5.3 Safety Considerations and PPE

In addition to the minimum PPE that is required at all times in the area (glasses, safety boots and hardhats) the following additional equipment may be necessary during this procedure.

- Half-face respirator with appropriate cartridge
- Face shield
- Gloves

5.4 Processing of Regular Size Aerosol Cans

The steps to process aerosol cans are as follows:

1. Attach the small vent hose onto the small bung opening of the drum that you are going to be draining the aerosol can into. See Attachment 7.1.
2. Turn on the scrubber unit via the switch on the wall.
3. If the scrubber unit is not operating, no processing can occur.
4. Ensure that the gasket is present and in place inside the aerosol puncturing unit.
5. The respirator may be donned at this point if required.
6. Place a can (upside down) inside the unit and make sure that the gasket surrounds the can so that material will not be directed upwards and out of the unit.
7. Put your hand on top of the can and depress the handle of the unit with the other hand causing the pin of the unit to puncture the can.
8. Release the handle and allow the contents to fully be drained from the can into the drum.
9. Remove the empty can and dispose of as regular garbage.

10. Continue to puncture and drain compatible waste aerosol cans into the same drum.
11. When the processing is complete, remove the vent hose and replace the small bung on the drum.
12. Rotate the cap of the aerosol unit in order to close the opening so that no vapors may escape.

5.5 Processing of Small Aerosol Cans

A similar but separate unit is utilized for processing small ("puffer sized") aerosol containers. The unit, which holds multiple small containers, is operated in the same manner with the same ventilation requirements as described in section 5.4 of this procedure with the following differences:

- Multiple containers may be processed at the same time.
- Cans are loaded in the container horizontally.
- The cans that do not puncture initially can be left in the unit and the operation repeated.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

7.1 Picture of Aerosol Processing Unit

8.0 APPROVALS

Department Manager

IMS Coordinator


Aerosol
Puncturing Unit
Small vent
hose
Handle
13215
13215

Drum Crusher/Compactor Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to reduce the volume of waste that is sent to landfill, and compact waste to increase the amount of waste we can put into a drum.

2.0 SCOPE

This procedure applies to any MEC personnel that may have to use the drum crusher/compactor.

3.0 DEFINITIONS

Drum crusher/compactor – Unit is used to crush empty drums and to compact materials into drums to increase the volume added to each drum sent out for disposal.

4.0 RESPONSIBILITIES

It is the responsibility of all MEC technicians working with the drum crusher/compactor to follow this procedure.

5.0 PROCEDURE

5.1 Crushing Drums

- Dehead emptied drums. Make sure there is not residue remaining in the drum.
- Bring scrap metal tipping bin near the unit.
- Open door of the crusher and place the drum in the crusher. Close crusher door.
- Pull 2 levers to engage hydraulics, and crush the drum.
- Open the door and remove the drum and place it in the scrap metal tipping bin.
- Continue these steps until the metal tipping bin is full. Once full, dump the tipping bin into the scrap metal roll off bin which is located outside of the process building.

5.2 Compacting material in drums

- Change the plate on the crusher.
- Remove the ring and lid from the drum that is being compacted.
- Place the drum in the crusher unit and shut the door.
- Pull 2 levers to engage the hydraulic ram.
- The unit will then compact the waste material that is in the drum.
- Fill the drum up with a compatible waste and compact again until the drum is full and cannot be compacted anymore.
- Remove the drum from the unit and put the drum lid and ring back on the drum.
- Repeat these steps as needed.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Paint Can Crusher (s) Bulking Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to help in the operation of the paint can crushers.

2.0 SCOPE

This procedure applies to all MEC technicians that use either the latex or oil based paint can crushers.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

It is the responsibility of all personnel at the MEC who are involved in the crushing of paint cans.

5.0 PROCEDURE

5.1 Oil Paint Bulking

- Turn on ventilation, located on the west wall of the transfer station.
- Place an empty open top drum under the crusher on a roller.
- Place a gaylord of waste paint cans and a garbage bin as near as possible to the crusher for the technician's convenience.
- Turn on crusher switch.
- Open the crusher door and place can(s) in the crusher, close the door and crusher will engage.
- Once the can(s) have been crushed, remove the crushed cans and place in the garbage.
- Repeat these steps until the open top drum is full or gaylord is empty.
- Change drums and gaylord after each gaylord is emptied unless otherwise told different.
- Once drum is removed from crusher area, take a sample and bring it to the lab. The lab will send it for PCB analysis. If results return less than 50 parts per million, the drum may be bulked into a rich burn tank or tanker.

- If the results of the sample indicate greater than 50 parts per million, the Operations manager and or supervisor must be notified. The manager or supervisor must relate this information to the proper regulatory authorities and proceed from there.
- Once operation of the unit is completed for the work shift, it should be cleaned.

5.2 Latex Paint Can crusher

- Put a gaylord of latex paint on the designated stand or stack of pallets next to the crusher.
- Bring an empty garbage bin and butt it up as tight as possible to the can crusher.
- Turn the crusher switch on.
- Place cans on the conveyor through the opening on the northeast end of the unit.
- The cans will flow down the conveyor and are crushed.
- Once crushed the cans continue on the conveyor and are dumped into the garbage bin located at the discharge end of the conveyor. If for any reason cans get jammed at the discharge end, the operator will pull the cans free using a hoe or other similar tool.
- Once the garbage bin is full, it is dumped into a roll-off bin containing a sufficient amount of peat moss to insure solidification when mixed.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

FLUORESCENT BULB PROCESSING

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

This procedure has been created to safely shred and process fluorescent bulbs which may contain low levels of mercury and respirable dust.

2.0 SCOPE

To provide the MEC technicians with the means to protect themselves while transferring of mercury containing fluorescent bulbs and treating of the waste. Stabilization/Solidification (S/S) is a waste treatment method in which contaminants are physically bound or “complexed” within a solidified mass, or chemical reactions are induced between the stabilized agent and contaminants to reduce their mobility.

3.0 DEFINITIONS

- Full Face Respirator – A respirator covering your entire face that uses air-purifying cartridges.
- Half Face Respirator – A respirator covering your nose and mouth that uses air purifying cartridges.
- RPE – Respiratory Protective Equipment.
- PPE – Personal Protective Equipment
- PB1- Process building one.
- PB2 – Process building two.
- Hepavac – Dust collector/filter.
- TCLP – Toxicity Characteristic Leaching Procedure.

4.0 RESPONSIBILITIES

It is the responsibility of all MEC technicians, contractors or any individual directly associated with any of the material being transferred deemed hazardous to abide by this procedure. It is the duty of the operations supervisor and or manager to enforce this procedure.

During any stabilization/solidification process each individual directly involved or working in proximity where hazardous conditions may involve them need the following PPE.

- Half face respirator, goggles plus PVC gloves or split leather with nitrile gloves.

These requirements are necessary without a bag house to contain any airborne dusts, or without a scrubber for any vapour/mist emissions that could be present. It is recommended that the PPE stated above be worn with or without the bag house being used.

5.0 PROCEDURE

5.1 Bulb Crusher

- Turn on hepavac and shredder switch.
- Remove a bulb from its packaging and send it through the sleeve chamber to crush the bulb.
- Continue this process until the drum is full.
- Label the drum as crushed fluorescent bulbs and affix a handling code for S/S. e.g. (PSI4).

5.2 Stabilizing and Solidification

- Drum is to be moved to Process Building 2 for S/S.
- Once there, common practice is to wait a suitable number of drums of this material to perform a batch, normally between 2 and 3 tonnes.
- The drums are flooded with water to contain the mercury vapours and are then dumped into a mixing bin.
- Reagents are added to render the mercury to a non leachable salt form and a sample is drawn to test the bin for TCLP.
- If the sample passes this bin can now be transported to a landfill. If the results do not meet the TCLP, this waste must be retreated with reagent.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager	IMS Coordinator

Batch Stabilization and Solidification Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this SOP is to safely and efficiently process and treat material designated for leachate metal stabilization and solidification, thus reducing the waste to a less hazardous form that conforms to landfill criteria.

2.0 SCOPE

This procedure provides guidance to stabilize and solidify wastes that cannot be successfully processed using 20.80.3-Heavy Metal Bearing Waste Stabilization and Solidification Procedure. These wastes require a more thorough and rigorous mixing to ensure the reagents used to chemically alter or fixate have sufficient exposure to the surface area of the leachable contaminants in the waste.

This procedure is designed for but not limited to unaugerable solids and sludge contaminated with metals, where only a slight pH adjustment (no heat or fumes are generated) is required allowing for the entire process to be performed in process building 2 (PB2).

Solids and sludge processed using this procedure are non-reactive, have a neutral pH (3 – 10), and are in a form that when added to the mixer no dust or vapours are generated.

The reagents used in this procedure include but are not limited to cement, sodium hydroxide, ferrous sulfate, calcium polysulfide and tri-sodium phosphate. What reagents are used depends entirely on the type and concentration of the contaminants, and all batch recipes will be individually designed by the laboratory personal.

3.0 DEFINITIONS

- Full Face Respirator – A respirator covering your entire face that uses air-purifying cartridges.
- Half Face Respirator – A respirator covering your nose and mouth that uses air purifying cartridges.

- RPE – Respiratory Protective Equipment.
- PPE – Personal Protective Equipment
- PB2 – Process building two.
- PVC gloves-Polyvinyl Chloride gloves

4.0 RESPONSIBILITIES

It is the responsibility of all MEC technicians, contractors or any individuals directly associated with any of the material being transferred deemed hazardous to abide by this procedure.

It is the duty of the operations supervisor and or manager to enforce this procedure.

During any stabilization/solidification process each individual directly involved or working in proximity where hazardous conditions may involve them need the following PPE.

- Half or full face respirator, goggles plus PVC gloves or split leather with nitrile gloves.

These requirements are necessary without a baghouse to contain any airborne dusts, or without a scrubber for any vapour/mist emissions that could be present.

Only individuals properly trained with the operation, troubleshooting and maintenance of the stand alone mixer shall perform the stabilization portion of this procedure.

5.0 PROCEDURE

Some waste may require particle size reduction prior to the stabilization steps explained below. Follow these steps to power on and off the hammer and conveyor located at the southeast corner of PB2. All users must read and understand the operating manuals, as well as direct training before performing this task individually.

1. Turn on the hammer mill switch/disconnect.
2. Turn on the conveyor disconnect.
3. Push the green button underneath the hammer mill to start.
4. Make sure ventilation hoses are all hooked up.
5. Make sure collection container (hopper or drum) is secured under the hammer mill.

6. Press forward on conveyor control – set at 35 to 40 Hz.
7. Turn on vibrator – set at 15 to 20.
8. Slowly add material requiring particle size reduction to the hopper using the forklift equipped with a tipper.
9. Monitor the conveyor and ensure contaminants such as pure metals are not allowed to reach the hammers.
10. When hopper gets full remove and weigh.
11. Subtract the tare weight of the hopper from the final weight and record the weight of the waste on the decant sheet.
12. When complete turn off vibrator, conveyor, hammer mill and turn off breakers.
13. Ensure the area is kept neat and swept regularly.

Some operations in PB2 require the use of a dust collector. These include the loading of cement trucks, hammer mill, and mixer. Follow these steps to power on and off the dust collector located at the southeast corner of PB2. All users must read and understand the operating manuals, as well as direct training before performing this task individually.

1. Turn on the compressor by turning off the emergency switch, turning the breaker on, and pressing the green switch on the compressor.
2. Turn on the dust collector by turning the fan and cleaning run on.
3. Setting for fan is “Hand”. Setting for cleaning is “continuous”.
4. Turn off the compressor by turning the emergency switch on and turning off the breaker.
5. Turn off the dust collector by turning the fan and cleaning run off.
6. To clean the unit leave the cleaning run on for 1 hour.
7. Ensure the area is kept neat and swept regularly.

- Each batch will consist of no more then 3000 Kg of waste solids or sludge.
- Waste solids or sludge is added using a forklift, drum tipper or backhoe.
- With the mixer turned on, wastewater (as directed by the lab) or clean water is added to bring the mixture to a slurry.
- Using hydroxide, the pH is adjusted to an ideal level that ensures minimum mobility of the specific metal contaminants. (usually @9-11). Samples of the slurry are periodically taken to the lab for verification.
- Once the pH is ideal and constant, the reagents are added as per the recipe designed by laboratory personal.
- After sufficient mixing has occurred to ensure a stabilized homogeneous slurry, the contents of the mixer are dumped into forms.
- A sample from each form is taken.

- The samples are composited for the entire batch, which are then sent to a second party laboratory for a full leachate test.
- When the analytical results are received and pass landfill criteria, the batch of forms can be loaded out to a class 1 landfill.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

6.2 20.80.3 Heavy Metal Bearing Waste Stabilization and Solidification Procedure

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Container Management Program
Empty Plastic Container Processing Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The MEC receives empty plastic containers from various sources. This procedure documents the safe handling instructions required for processing this plastic in preparation for re-sale**.**

2.0 SCOPE

The procedure applies to all pesticide plastic containers received at the MEC for the purpose of shredding and resale.

3.0 DEFINITIONS

CMP Granulating System – equipment used for shredding empty plastic pesticide jugs, empty drums, empty pails, totes, and other plastic

CMP – Container Management Program

PB1 – Processing Building 1

PB2 – Processing Building 2

4.0 RESPONSIBILITIES

It is the responsibility of all Miller employees associated with the container management program to understand and comply with the contents of this procedure.

Only employees who have received additional training in the operation, troubleshooting and maintenance of the granulating system are authorized to perform the operation and maintenance portion of this procedure.

4.1 Safety Considerations & PPE

In addition to the minimum PPE that is required at all times in the processing area (safety glasses, steel toe boots, hardhats) the following additional equipment is necessary for certain processing steps:

- Rain Suit (coat and pants) or ¾ length rain jacket or Tyvek coveralls (for oil)
- Hearing Protection (disposable ear plugs)
- Steel toe rubber boots
- PVC gloves
- Half-face or full face respirator with yellow (organic vapor) cartridge and dust filter
- Splash goggles

Note: It is of the utmost importance that all activities within this process are completely understood by all technicians involved. All parts of this process should be coordinated through operations. There is a potential for extremely dangerous conditions if this process is not followed correctly.

5.0 PROCEDURE

5.1 Unloading Transport Units

Trailers will be backed in towards the door located on the west side of PB2. The trailer may be unloaded either manually or with the use of the backhoe. When the backhoe is used, it is hooked up to a chain which is connected to a movable wall located at the front of the trailer. The wall is slowly pulled towards the back of the trailer pushing the empty containers out. Due to the danger of the cable snapping and recoiling like a whip, all personnel should remove themselves to a secure area. The containers remaining in the trailer are then unloaded manually. When the trailer is unloaded completely, the movable wall is rolled to the front of the trailer and secured. Any debris on the bumper or door sill is removed to avoid debris falling off while in transit, the doors are closed and latched. The driver is then given the all clear to remove the trailer from the unloading area.

All paperwork arriving with the trailer should be taken to the dispatch office located in PB1.

5.2 Preparation of Empty Containers for Granulation

Any liquids remaining in the containers must be bulked into a tote and labeled as bulked pesticide liquid, class 6.1. These labels can be obtained from the dispatch office in PB1. Any containers that had residue must be emptied. Use of additional PPE is required during this process. Once the tote is full, it is brought over to PB1.

Every plastic container must have the caps, booklets and any easily removable labels removed prior to granulation. The caps and paper are collected in drums to be dumped in a garbage bin or the contents compacted for disposal to the landfill. The plastic container is thrown into large wooden bin housing the conveyor.

5.3 Granulator System Operation

This step should only be completed by an employee who has been trained specifically on the operation, troubleshooting and maintenance of the granulating system.

Once the employee has checked the system over, start the generator first by turning up the toggle switch on the control panel until an audible beep sounds. Press “run” for 2 seconds until the generator starts. Start all systems by pressing the 5 green buttons found on the control panel. **See attachment 8.2 – Picture of generator control panel and granulator system control panel**.

When shutting down, turn off the conveyor first and allow the rest of the equipment to continue running for approximately 5 minutes, allowing any remaining plastic to clear the cutting chamber. The pump must be unplugged first or make sure the amperage on generator reads 0 or a relay will blow. Press the 5 red buttons and shut down the generator by pressing the off switch on the generator panel and turning the toggle switch down.

5.4 Plastic Granulation

Empty IBC bags are placed on the stands located directly under the two final discharge arms.

The plastic containers prepared in section 5.2 are loaded onto the conveyor system for processing. Once the IBC bag is full, the granulating system is shut down as per instructions for shut down in section 5.3. The generator is usually turned off as well except in the winter. The full bag is removed and weighed. Each bag’s weight and

original generator is tracked using the plastic shredding log form PSL193. At the end of each month, all tracking sheets are handed in to the dispatch office.

Fill in the tracking sheet PSL 193 (Reference 6.1) and hand in to the lead hand.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 Internal Form PSL193

7.0 ATTACHMENTS

7.1 Unloading Areas
7.2 Picture of generator control panel and granulator system control panel

8.0 APPROVALS

Department Manager

IMS Coordinator

Analytical Method – Flash Point

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Flammable and combustible liquids alone will not burn. It is the mixture of their vapours and air that burns. In order for a vapour/air mixture to burn, the ratio of vapour/air must be between the lower flammable limit (LFL) and upper flammable limit (UFL) for that particular mixture. A concentration of vapour in air below the LFL is too "lean" to burn and a concentration of vapour above the UFL is to "rich" to burn.

The flash point of a liquids is the lowest temperature at which the liquid gives off enough vapour to be ignited at its surface i.e. the temperature can indicate when the vapour in air concentration reaches the LFL.

2.0 SCOPE

This procedure is used to determine if waste materials exhibit the characteristic of a flash point, and to determine the flash point temperature.

3.0 DEFINITIONS

See Glossary

4.0 RESPONSIBILITIES

The MEC laboratory is responsible for performing this test procedure on materials to determine if they exhibit the characteristic of flammability.

5.0 PROCEDURE

5.1 Sample Preparation and Storage

Samples of very viscous materials may be warmed until they are reasonably fluid before they are tested. However, no sample should be heated more than is absolutely necessary. It shall never be heated above a temperature of 17°C below its expected flash point.

In the case where the apparatus is located in a fume hood, perform the test with the fume hood turned off to minimize drafts which could affect the test results

Samples should not be stored in plastic (polyethylene, polypropylene, etc.) bottles, since volatile material may diffuse through the walls of the bottle.

Collect samples in sealable glass containers.

5.2 Safety

Safety glasses must be worn at all times. An ABC fire extinguisher must be readily available at all times.

5.3 Method A – Basic Procedure (for clean solvents)

1. Thoroughly clean and dry all parts of the cup and its accessories before starting the test, being sure to remove any solvent which had been used to clean the apparatus.
2. Fill the cup with the sample to be tested to the level indicated by the filling mark (50 mL).
3. Place the lid on the cup and set the latter in the apparatus. Be sure to have the locating or locking device properly engaged. Insert the thermometer.
4. Light the test flame and adjust it to a 4 mm diameter.
5. Turn on the sample heater and adjust the rheostat to supply heat at a rate that the temperature, as indicated by the thermometer, increases by 5 to 6°C / minute.
6. Turn the stirrer at 90 to 120 $\pm$ 10 rpm, stirring in a downward direction.
7. Apply the test flame when the temperature of the sample is from 17 to 28°C below the expected flash point and thereafter at a temperature reading that is a multiple of 1°C. *Apply the test flame by operating the mechanism on the cover which controls the shutter and test flame-burner so that the flame is lowered into the vapour space of the cup in 0.5 s, left in its lowered position for 1s, and quickly raise to its high position.* Do not stir the sample while applying the test flame.
8. Record as the observed flash point the temperature read on the thermometer at the time application of the test flame causes a distinct flash in the interior of the cup. Do not confuse the true flash point with the bluish halo that sometimes surrounds the test flame at applications preceding the one that causes the actual flash.

5.4 Method B – Determination of flash Point of Suspensions of Solids and Highly Viscous Materials

- Bring the material to be tested and the tester to a temperature of 15 $\pm$ 5°C or 11°C lower than the estimated flash point, whichever is lower. Turn the stirrer to

250 ± 10 rpm, stirring in a downward direction. Raise the temperature throughout the duration of the test at a rate of not less than 1 and no more that 1.5 °C/minute. With the exception of these requirements for rates of stirring and heating, proceed as prescribed in the basic procedure above.

5.5 Calculations

Observe and record the ambient barometric pressure at the time of the test. When the pressure differs from 760 mm Hg (101.3 kPa), correct the flash point as follows:

- Corrected flash point = °C + 0.033 (460 – p) = °C + 0.25 (101.3 – p)

Where:

- P = ambient barometric pressure (mm Hg), and
- P = ambient barometric pressure (kPa)

5.6 Quality Assurance

Test the performance of the unit at least once per year per ASTM D 93 using a certified standard.

5.7 Apparatus

1. Precision Scientific Pensky – Martens Flash Tester TS-74537
2. Reagents – m-xylene (standard)

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester, ASTM-IP Standard, D 93 2000
6.3 Precision Scientific Instruction Manual TS-74537 AP-9

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Test Method for Total Water in Hazardous Wastes by Karl Fischer Titrimetry

1.0 Purpose

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

Waste solvents generally contain water that can affect their heat of combustion, and consequently disposal options and cost for disposal. The water content must be determined for individual wastes in order to choose the proper disposal. Blended flammable wastes must also be analyzed for water content prior to disposal to ensure that disposal criteria are met for the facility the waste is intended to be shipped to.

2.0 Scope

All oil, fuels, solvent and paint (liquid) samples submitted to the laboratory must be analyzed for water content. The nominal operating range of this method is 0 - 100 % water.

3.0 Operating Principle

In the Karl Fischer method of water determination, water is converted stoichiometrically in the presence of sulfur dioxide, methanol and a suitable base by addition of iodine. The titration can be followed exactly by using a two-pin platinum electrode which has a current source applied to its poles. The voltage measured at the polarized electrode pins is used by the controls as an input signal. When the last traces of water have been titrated out, voltage drops to virtually zero: the electrodes are then depolarized by the iodine now present; the small electrical current oxidizes iodine at one electrode and reduces the same amount of iodine at the other electrode.

4.0 Interferences

A small number of oxidants such as ferric and chromate salts can oxidize iodine and may produce artificially low results.

Certain reductants oxidized by iodine such as mercaptans, thioacetate, thiosulfate, stannous chloride, sulfides, hydroquinone, and phenylenediamines can consume iodine and may cause artificially high results. Basic materials such as hydroxides, oxides, and inorganic carbonates may cause artificially high results by water forming reactions.

Some types of solid material found in waste-derived fuel may interfere with the electrode by blocking its contact with the solvent. Depending on the nature of the solid material, artificially high or low results can occur.

5.0 Apparatus

- Mettler DL18 Karl Fischer Titrator
- Syringe – 100 uL capacity
- Transfer Pipets – Fisherbrand disposable Cat. No. 13-711-9A
- Culture Tubes – Fisherbrand disposable Cat. No. 14-961-27
- Ohaus Analytical Scale – 100 g capacity capable of weighing to 0.0001 g.

6.0 Reagents And Materials

- Karl Fisher Solvent – Aqualine Matrix K - Fisher AL2300-1
- Karl Fisher Reagent – Aqualine Complete 5 – Water Equiv. – 5mg/H2O/mL – Fisher AL2000-1

7.0 Procedure

7.1 Water Titrator Instructions

- Turn unit on. (back of unit)
- The date prompt will come up. Press run three times.
- The burette will then come down. Press run once more.
- At this point the titrator will find its dry, set point. (wait).
- The unit will beep when the set point is attained.
- The unit is ready for sample titration..

7.2 Water Titrator Configuration

- Parameter 1 – Switch off delay = 15 seconds

- Parameter 2 – Result unit = 1 (0 = mg, 1 = %, 2 = ppm)
- Parameter 3 – Type of reagent = 2 (Pyridine free KF titrant and solvent.
- Parameter 4 – Calibration sample = 0 (5-20 ul, 2-20 mg)
- Parameter 5 – Automatic pretitration = 1 (yes)
- Parameter 6 – Request of stirring time = 0
- Parameter 7 – Request of blank value = 0
- Parameter 8 – Request of sample number = 0
- Parameter 9 – Acoustical signal = 2 (at end of titration and with keys)
- Parameter A – Maximum volume = 6 (burette strokes)

7.3 Concentration Determination

- Press mode button to enter Conc mode (Conc light will illuminate).
- Press run button.
- Pull up about 10 uL of water into the 100 uL syringe.
- Place syringe with water on the analytical balance and press zero.
- Inject water from the syringe into the KF solvent bowl without letting the needle enter the solvent liquid.
- Re-place the syringe on the balance to determine the weight of the water injected.
- Enter the weight of the water injected and press run.
- Instrument will titrate the concentration factor (@25-26)

7.4 Drift Determination

- Press mode key twice (drift light will illuminate).
- Type in 300
- Press drift key

7.5 Sample Titration

- Shake to mix the sample well then draw up some of the sample into the disposable 3 mL bulb draw plastic pipet.
- Place the pipette into an empty culture tube.
- Place the culture tube with the sample filled pipette in a cup or beaker on the balance and zero tare them.
- With the instrument ready (solvent pre-titrated to dryness and ready light illuminated) press the run button.
- Expel and refill the contents of the pipette in the culture tube several times just prior to putting sample into the KF solvent bowl.

- Add sample drop wise with the pipette (approx 0.030 to 0.1 g usually 2-4 drops) to the KF solvent bowl.
- Replace pipette and culture tube on balance to determine the weight of sample introduced into the KF bowl.
- Type in the weight of the sample introduced.
- Press run twice.
- Instrument will titrate and report percent water.

8.0 References

8.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

8.2 Mettler Toledo DL18 Karl Fisher Titrator Operating Instructions Manual.

8.3 ASTM D5530: Standard Test Method for Total Moisture of Hazardous Waste Fuel by Karl Fischer Titrimetry, Rev. 7 – December 2000.

8.4 EPA Method 9000 – Determination of Water In Waste Materials by Karl Fischer Titration, Rev. 0 – January 1998

9.0 Attachments

10.0 Approvals

Department Manager

IMS Coordinator

Operation of Ohaus Analytical Balance Model AS120

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to outline a procedure for the use and calibration of the Ohaus analytical balance Model AS120.

2.0 SCOPE

This applies to the analytical balance used in the laboratory at the MEC facility.

3.0 DEFINITIONS

ASTM Class 1 weight: A stainless steel weight calibrated according to ANSI/ASTM specifications.

4.0 RESPONSIBILITIES

This document applies to all personnel using the Ohaus analytical balance.

5.0 PROCEDURE

5.1 Leveling Balance

1. Check the level of the balance
2. If necessary adjust the two leveling feet at the front of the balance until the bubble appears in the center circle of the level indicator.

5.2 Operation

1. Turn on balance by pressing the "ON→O/T←" button . Ensure no load is in the pan.
2. Check calibration logbook to ensure calibration has been performed on the weekly interval.
3. If calibration check is needed, place ASTM Class 1 50g weight on the pan.
4. Allow reading to stabilize by waiting for the unit indicator to appear next to weight. Record displayed weight in calibration logbook.
5. Displayed value must be within the range of 49.999g and 50.001g to be considered calibrated.

6. If the displayed value is not within the above range calibration will be necessary. Proceed to Section 5.3.

5.3 Weighing Samples

1. Press "ON→O/T←" button to zero balance.
2. Place object on weighing pan.
3. Wait for reading to stabilize, which will be indicated by an indicator (*) appearing in the upper left hand portion of the display.
4. Record weight.

5.4 Zero/Tare Operation

1. Place an empty container on the weighing pan. It's weight will be displayed.
2. Press the "ON→O/T←" button. Zero will appear in the display and the containers weight will be stored in memory.
3. Add the appropriate amount of material to the container and wait for the weight to stabilize, as discussed in Section 5.3 Step (iii).
4. When the container and material are removed, the container's weight will appear as a negative value.
5. The container's weight will be stored in memory until the "ON→O/T←" button is pressed again.

NOTE: Tare range is the capacity of the scale, 122 grams.

5.5 Calibration

5.5.1 Span Calibration

1. Press and hold the "ON→O/T←" button until CAL is displayed then release button. SPAN will be displayed on balance.
2. Press the "ON→O/T←" button to start the calibration.
3. When "ON→O/T←" button is released , "C 0g" will be displayed.
4. Press "ON→O/T←" button. "- C –" will be displayed momentarily. Do not disturb the balance, as it will result in an improper calibration.
5. Place the ASTM Class 1 100g weight on the pan and press "ON→O/T←" button. The display will show – C – momentarily while the balance completes the calibration.
6. When the weight on the balance is displayed along with the unit indicator, the balance is calibrated.

5.5.2 Linearity Calibration

1. Press and hold "ON→O/T←" button until CAL is displayed then release button. Balance will display SPAN.
2. Press "OFF MODE" button. Balance will display LIN.
3. Press "ON→O/T←" button and release. "C 0g" will be displayed.
4. Press "ON→O/T←" button and " – C –" will momentarily appear in display, followed by "C 50g".
5. Place 50g ASTM Class 1 weight on pan.
6. Press "ON→O/T←" button.
7. " –C- " will appear momentarily in display, followed by "C 100g".
8. Remove the 50g weight from the weighing pan.
9. Place 100g ASTM Class 1 weight on pan.
10. Press the "ON→O/T←" button. "-C-" will momentarily appear while the balance calibrates.
11. When the weight is displayed along with the unit indicator, the balance is calibrated.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007
6.2 ANALYTICAL Standard Electronic Balances AS Series Instruction Manual – Ohaus Corporation.

7.0 ATTACHMENTS

8.0 APPROVALS

Department Manager

IMS Coordinator

Classification Procedure:
Test Method And Criteria Relating To Oxidizing Solids of Division 5.1

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The test procedure outlined here adequately assesses the relative hazard of oxidizing solids so that an appropriate classification for transport and/or disposal can be made.

2.0 SCOPE

This method can be used to evaluate the relative oxidizing hazard posed by a solid waste. The method is based on a "conical pile-type burning test method" adapted from the United Nations regulations and classification procedures for the international transportation of dangerous goods.

A test is performed to determine the potential for a solid substance to increase the burning rate or burning intensity of a combustible substance when the two are thoroughly mixed. Whether a solid is an oxidizing substance of Division 5.1 and, if so, whether Packing Group I, II or III should be assigned, is decided on the basis of the test. As the particle size has a significant effect on the result, the particle size of the substance tested should be stated in the test report.

This test procedure is suitable for assessing the relative oxidizing hazard of solid substances, including solids, granular materials, and other materials that can be formed into a conical pile.

3.0 DEFINITIONS

The following definitions are intended solely as guidance to assist the user in properly classifying wastes that have oxidizing properties.

Oxidizing substance - Any substance which, while in itself is not necessarily combustible, may generally yield oxygen and cause, or contribute to, the combustion of other material and which meet the criteria under TDG for an oxidizing material.

Burning rate - For the purpose of this test, the burning rate is defined as the time, in seconds, from the application of electrical power to the heating wire until the main reaction (e.g. ,flame, incandescence, or glowing combustion) ends. Intermittent reactions, such as sparking or sputtering after the main reaction is completed, are not considered.

4.0 RESPONSIBILITIES

It is the responsibility of the Miller Environmental Corporation (Miller) laboratory staff to assess by the following procedure any materials which may be classed as oxidizing substances and which are destined for disposal. The results of the procedure are to be used to determine processing and disposal requirements according to TDG regulation.

5.0 PROCEDURE

5.1 Summary of Method

Aliquots of the waste sample are mixed thoroughly with fibrous cellulose in both 1:1 and 4:1 weight-to-weight ratios. A 30-g aliquot of the waste:cellulose mixture is formed into a truncated conical pile on a cool, impervious surface by means of a glass funnel having a base approximately 70 mm in diameter. The sample is ignited by means of an electrically heated wire inserted into the base of the pile. The burning time (in seconds) of each waste mixture is measured under standard conditions and recorded. The test is repeated five times for each waste:cellulose ratio mixture.

The burning times of the waste mixtures are then compared with the burning time for a standard reference substance consisting of a 3:7 weight-to-weight ratio of potassium bromate and cellulose. If the burning times for both the 1:1 and 4:1 waste mixtures are greater than the burning time for the 3:7 potassium bromate:cellulose standard, then no further testing is required and the results of the test are negative. If one or both of the burning times for the waste mixtures are equal to or less than that of the 3:7 potassium bromate:cellulose standard, then the waste mixture burning time is compared with the burning times for the 2:3 and/or the 3:2 potassium bromate:cellulose standards.

This test classifies a solid waste into one of three categories of class 5.1 oxidizers.

Packing Group I: Wastes of either mixture ratio that exhibit a mean burning time less than or equal to the burning time of the 3:2 potassium bromate:cellulose standard are classified in Packing Group I.

Packing Group II: Wastes of either mixture ratio that exhibit a mean burning time
less than or equal to the burning time of the 2:3 potassium bromate:cellulose standard and greater than the burning time of the 3:2 potassium bromate:cellulose standard are classified in Packing Group II.

Packing Group III: Wastes of either mixture ratio that exhibit a mean burning time
equal to or less than the burning time of the 3:7 potassium bromate:cellulose standard and greater than the burning time of the 2:3 potassium bromate:cellulose standard are classified in Packing Group III.

Not Division 5.1: Wastes of either mixture ratio that do not ignite and burn, or that exhibit a burning time for both mixture ratios greater than the burning time of the 3:7 potassium bromate:cellulose standard will not be classified in division 5.1

5.2 Interferences

This method measures the burning rates of various mixtures of potassium bromate and cellulose, which are used as standards to categorize waste mixtures under a set of uniform experimental conditions. Although no interferents have been reported for this method, several factors such as particle size, reagent moisture content, room temperature, humidity, ventilation, position of the test sample in the hood, and the position of the ignition wire within the test pile can have a significant impact on the burning rates and overall method precision. In order to obtain reliable and reproducible results, it is essential that all steps be conducted in a consistent manner under the same experimental conditions. Strict adherence to all reagent specifications (i.e., particle size, moisture content, etc.) must be observed and the test conditions must be held constant throughout the evaluation.

5.3 Safety, Pollution Prevention and Waste Management

General Safety Procedures

- Be knowledgeable of the MSDS information for each chemical which is used in the procedure.
- Comply with the instrument manufacturer's and chemical supplier's safety precautions.
- Comply with all applicable safety regulations and safety SOPs.
- Sample analysis functions shall be performed in the appropriate environment, such as canopies or fume hoods.

- Gloves, protective clothing, face shields, and protective eyewear should be worn by all analysts and technicians while they are in the laboratory. The staff shall always remove gloves and other protective clothing prior to leaving the laboratory and dispose or store them properly.
- All analysts and technicians shall wash all areas of their hands and arms which may have been exposed to contaminated materials prior to leaving the lab.

5.3.1 Specific Concerns

- This method could involve the combustion of highly flammable materials and the generation of toxic fumes. All tests must be conducted in a suitable fume hood fitted with a pulldown sash to prevent the escape of toxic fumes into working areas. The analyst should wear appropriate protective clothing, including a laboratory jacket or apron, safety glasses, and protective gloves. The laboratory should have appropriate fire fighting equipment (such as a Class A fire extinguisher) readily available to extinguish small fires.

5.4 Equipment and Supplies

- An ignition source comprising of an inert metal wire such as platinum or nickel, which can be electrically heated to approximately 1,000EC. The wire is formed into the shape shown in Appendix 1.
- Low-heat conducting, non-combustible, impervious ceramic tile or equivalent material of sufficient size to support a 70-mm diameter test sample. This tile will be used as a platform to conduct the burning rate tests for the reference substances and waste mixtures.
- A thermocouple to measure the temperature of the ignition wire.
- A calibrated thermometer to measure room temperature.
- Standard sieves, 0.150-mm, 0.300-mm, and 0.500-mm (Tyler screen scale equivalent of 100-, 48-, and 32-mesh respectively).
- A 60E glass funnel, sealed at the narrow end, with an internal diameter of 70 mm. This funnel is used to form the reference standards and waste mixtures into truncated conical piles with a 70-mm base.
- Stopwatch capable of measuring 0.1-second increments.
- 500-mL glass beakers or other containers suitable for preparing the reference standards.

5.5 Reagents and Standards

Reagent grade chemicals must be used in all tests. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

- Potassium bromate (KBrO3), crystalline (CASRN 7758-01-2).

NOTE: Potassium bromate must have a nominal particle size range of 0.15 to 0.30 mm. It should be sieved through the 0.30-mm sieve followed by the 0.15-mm sieve. Light crushing and grinding is permissible to achieve the desired particle size if necessary. Carefully dry these reference substances at 65 ± 2EC for 12 hours and store in a desiccator until used.

- Cellulose fibers, with a fiber length between 50 and 350 µm and a mean diameter of 25 µm, to be used as a combustible substrate with the reference reagent and samples. Dry in a layer no more than 25 mm in thickness at 105 ± 5EC for 4 hours and store in a desiccator until required. Each batch should be used within 24 hours of its preparation. The water content should be less than 0.5% by dry mass.

5.6 Reference Standards

- Potassium bromate and cellulose reference standard (3:7) - Each reference standard is tested five times to determine the mean burning time. Each trial is conducted with 30 ± 0.1 g of mixture. In a 500-mL beaker or other suitable glass container, mix 60 g of potassium bromate and 140 g cellulose. The materials must be thoroughly mixed to assure a homogeneous mixture. Mechanical mixing devices may be used to assure complete mixing. The reference substance should be stored in a desiccator until the test is conducted. The 200 g of reference material will provide enough material for five trials using 30 ± 0.1 g of material, plus an additional 30-g aliquot of material. if needed. This reference standard has the longest burning time.
- Potassium bromate and cellulose reference standard (2:3) - Prepare in the same manner as described in Sec. 7.3.1, except that 80 g of potassium bromate are mixed with 120 g of cellulose. This reference standard has an intermediate burning time.
- Potassium bromate and cellulose reference standard (3:2) - Prepare in the same manner as described in Sec. 7.3.1, except that 120 g of potassium bromate are mixed with 80 g of cellulose. This reference standard has the shortest burning time.

5.7 Sample Collection, Preservation and Storage

Sample Collection

- Samples should be collected in clean glass containers fitted with PTFE-lined screw caps.

- This procedure requires a minimum sample weight of approximately 260 g. It is recommended that more than 500 g of sample be collected to allow for retesting or confirmation of initial test results, if necessary.

Sample Preservation

- No preservatives are added to the sample. The waste is tested at ambient laboratory temperature.

Sample Storage

- Samples should be stored at 4 ± 2EC until evaluated. Prior to conducting this test, the sample should be allowed to equilibrate to ambient laboratory temperature (20 ± 5EC). If the loss of volatile organic constituents are of concern, the entire sample in its original sample container should be allowed to equilibrate to ambient laboratory temperature.

NOTE: A holding time for oxidizing solids has not been established. The sample should be tested as soon as possible to avoid any further chemical or physical changes.

5.8 Quality Control

The mean burning time for each reference standard is determined using a minimum of two separate trials each time the test is performed. Perform each evaluation and average the results of the trials. It is not necessary to determine the burning time for all three reference substances as long as the waste can be properly categorized. For example, if a waste does not ignite or has a burning time greater than that of the 3:7 potassium bromate:cellulose standard, no further testing is required and the burning times for the 2:3 and 3:2 potassium bromate:cellulose standards need not be determined. Should the waste exhibit a burning time less than the 3:7 potassium bromate:cellulose standard, prepare and test the 2:3 and/or 3:2 potassium bromate:cellulose reference standards as needed.

Each waste is evaluated in 1:1 and 4:1 weight-to-weight (waste:cellulose) ratios. The burning time for each waste mixture ratio is evaluated in two separate trials and the average burning time is calculated for each waste mixture ratio by dividing the sum of the burning times by two.

Each waste is categorized based on the shortest mean burning time for either waste mixture. For example, if the mean burning time for the 1:1 waste mixture is 55 seconds and the mean burning time for the 4:1 waste mixture is 28 seconds, then the 28 second burning time is compared to the mean burning times exhibited by the reference standard(s) in order to make the appropriate oxidizing classification.

5.9 Procedure

5.9.1 Waste Preparation

- The waste to be evaluated is tested in its "as received" form and should not be dried. The waste should be stored at 4 ± 2EC. It should be allowed to equilibrate to ambient laboratory temperature (20 ± 5EC) immediately prior to analysis.
- Evaluate the particle size of the waste, in order to assure consistent burning rate times and to assure the complete mixing of waste and cellulose. The waste should be cut, crushed, or ground so that the particle size of the sample to be tested is no larger than 0.5 mm (passes through a 32-mesh sieve).
- Waste:cellulose mixture (1:1) - In a 500-mL beaker or other suitable glass container, mix 100 g of waste and 100 g of cellulose. The materials must be thoroughly mixed to assure a homogeneous mixture. Mechanical mixing devices may be used to assure complete mixing. This will provide enough test material to conduct two burning rate trials using 30 ± 0.1 g of material per trial, and additional aliquots if needed.
- Waste:cellulose mixture (4:1) - In a 500-mL beaker or other suitable glass container, mix 160 g of waste and 40 g of cellulose using the procedure described above.

5.9.2 Burning Rate Test

- Weigh two separate 30.0 ± 0.1 g aliquots of the 3:7 potassium bromate:cellulose reference standard into two separate glass beakers or other suitable containers.
- Position the ceramic tile in a fume hood approximately 20 cm (8 inches) from the front of the hood in an area of laminar airflow. Air flow across the test

sample should be minimal (approximately 0.5 - 0.7 m/s), but sufficient to prevent the escape of fumes or smoke into working areas.

- Position the ignition wire over the center of the ceramic tile. The ignition wire is formed into a 40-mm circular loop, approximately 1 mm above the test surface.
- Place 30.0 g ± 0.1 g of reference substance into the glass funnel. Tap the funnel gently to settle the material in the funnel, place the ignition wire and ceramic tile on top of the funnel, and then invert the funnel and sample to cover the ignition wire and ceramic tile. Remove the funnel. The reference substance should be in the form a truncated conical pile with a base approximately 70 mm in diameter, centered over the ignition wire so that the wire is completely covered by the test sample. Refer to Appendix 1 for placement of the conical pile and ignition wire.
- Measure the burning time of the 3:7 potassium bromate:cellulose reference standard by turning on the electric power and heating the ignition wire to at least 1000^{o}C, but no greater than 1050 ^{o} C. Begin timing when the power is applied to the wire and continue timing until the end of the main combustion. Once the pile is ignited, turn off the power to the ignition wire. Record the total burning time in seconds. Repeat the burning time trial, using a fresh 30.0 g ± 0.1 gram aliquot of reference standard, and calculate the mean burning time. Allow the ceramic tile to cool to ambient temperature between time trials. In order to ensure consistent data, all testing must be conducted under standard test conditions, which include a temperature of 20 ± 5^{o} C and a relative humidity of 50 ± 10%.
- Measure the burning time for each aliquot of the 2:3 potassium bromate:cellulose standard and the 3:2 potassium bromate:cellulose standard. Calculate the mean burning time for the standards. Note that, depending on the burning times exhibited by the waste mixtures, a determination of the burning times for all three reference mixtures may not be required.
- Measure the burning times of the 1:1 and 4:1 waste:cellulose mixtures. Each waste concentration is evaluated with the separate time trials and the average burning time is calculated. The shortest mean burning time for either waste concentration is used to categorize the waste.
- Apply power to the ignition wire until observable signs of combustion are evident. If the waste mixture does not appear to ignite, continue heating the ignition wire for a period of at least three minutes. If the waste fails to ignite after this period of time, no additional trials are required and the results of the oxidizing test are negative.

NOTE: This procedure compares the mean burning time exhibited by a waste to that of standard reference materials having known burning characteristics. It is therefore critical that the test be conducted in a consistent manner in order to

assure reliable and consistent results. Care should be taken to assure that all test conditions are held constant to the extent possible. The position of the ceramic tile within the fume hood and the position of the ignition wire within the conical pile should be the same for all trials. Recognition of ignition and termination of burning must be applied in a consistent manner for both reference substances and waste mixtures.

5.9.3 Criteria And Method For Assessing Results

The results are assessed on the basis of:

- Whether the waste mixture ignites and burns; and
- The comparison of the average burning time for two waste mixtures with those of the reference standards.

5.10 Data Analysis and Calculations

A waste sample is categorized by comparing the shortest mean burning time for either of the waste mixtures (1:1 waste:cellulose and 4:1 waste:cellulose) with the mean burning times exhibited by the standard reference substances. Category I wastes have the highest oxidizing strength, while wastes in category III have the lowest oxidizing strength. Wastes that do not ignite or burn within three minutes, or have burning times greater than the 3:7 potassium bromate standard, are not considered oxidizers under this test. Use the table below to make the appropriate classification.

If the shortest mean burning time in seconds for the any waste mixture is…	**Then the waste is categorized as…**
Less than or equal to that of the 3:2 potassium bromate:cellulose standard	Class 5.1, Packing Group I
Less than or equal to that of the 2:3 potassium bromate:cellulose standard and greater than that of the 3:2 potassium bromate:cellulose standard.	Class 5.1, Packing Group II
Less than or equal to that of the 3:7 potassium bromate:cellulose standard and greater than that of the 2.3 potassium bromate:cellulose standard.	Class 5.1, Packing Group III

Greater than that of the 3:7 potassium bromate:cellulose standard or does not ignite or burn within three minutes.	Not classified as 5.1

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

6.2 United Nations Publication: Recommendations on the Transport of Dangerous Goods, Model Regulations, 13th revised edition, 2003 – Chapter 2.5 – Class 5 – Oxidizing Substances and Organic Peroxides.

6.3 United Nations Publication: Manual of Tests and Criteria, 4th revised edition, 2003 – Part III, Section 34 – Classification Procedures, Test Methods and Criteria Relating to Oxidizing Substances of Division 5.1.

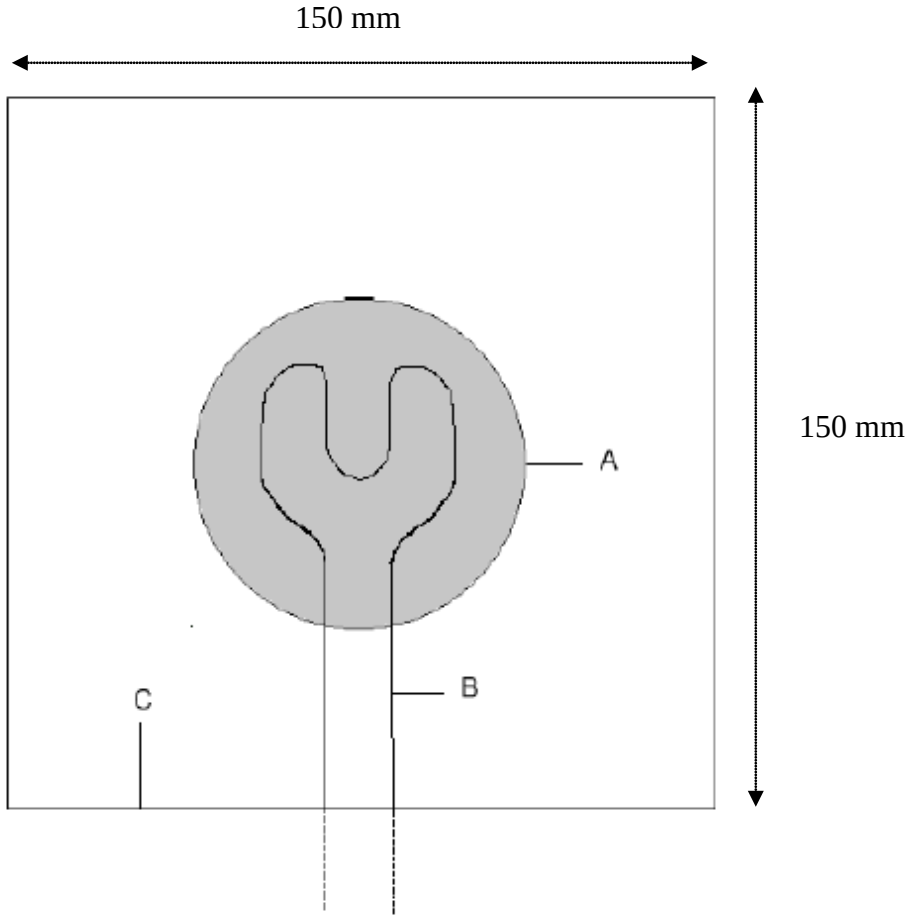
6.4 U.S. EPA , SW-846 (3rd edition) – Method 1040 – Test Method For Oxidizing Solids, Revision 0, November 2000.

7.0 ATTACHMENTS

8.0 APPROVALS

General Manager IMS Coordinator

Appendix 1
Test Plate And Ignition Wire



A = Outline of the base of the 70-mm conical pile

B = Approximate position and shape of the ignitor wire

C = Ceramic tile or other non-combustible material, approximately 150 mm on each side

New Waste Testing and Development

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to describe how Miller Environmental Corporation (Miller) develops procedures for new waste streams and/or processes as required by sales or management

2.0 SCOPE

This procedure covers initial documentation of new waste streams, the request for testing and process development, and the feasibility/costing report prepared and provided by the lab.

3.0 DEFINITIONS

None

4.0 RESPONSIBILITIES

Sales and/or Miller management are responsible for obtaining appropriate samples, completing the documentation and sending the sample and all information available to the MEC laboratory and initiating the project. The project initiator will collect all lab information, process testing, and lab reports including process costs to determine feasibility of obtaining the waste.

The laboratory is responsible for any testing required, bench scale process development, cost development, and provision of a report encompassing all activities and information.

Technical Services is responsible for assisting in the research project as necessary at all levels.

5.0 PROCEDURE

5.1 Initial Sample Information

- Sales or management will obtain sufficient samples to undertake process development. Contact with the lab will determine the quantity needed for each case.
- The person initiating the request will complete a Waste Qualification Form, including all information known about the waste. For example, the type of waste, how it is produced, quantity, frequency of generation, and type of containers it would be shipped in. If any analytical information or MSDS are available, they should be included in the information package.
- The type of testing required, and the preferred/expected disposal process and/or destination should also be documented on the form.

- A sample(s) of the waste will be sent with the information package to the MEC for testing and review.
- The project initiator will begin a project file, which will be included in the client files, and containing copies of all pertinent information. The file will be given a project identification name.
- The project summary (NWT127 - New Waste Testing and Development log) (stored in the top of the customer files cabinet) will be completed by the person initiating the project.
- The summary log will be kept updated by the project initiator as the project progresses.

5.2 Testing and Process Development

- The lab will develop and document the expected testing protocol when the sample(s) and information has been received from Winnipeg. All time spent on the project will be documented.
- All analytical work and process or bench scale testing will be documented and attached to a process cost estimation form. Results of any outside analytical work will be kept in a project file, maintaining the project number supplied by the project initiator. Time spent on the project will be recorded on a time sheet.
- Contact will be maintained with the project initiator and updates provided regularly. The project should not extend beyond 2 weeks unless agreed to by sales.
- Upon completion of the testing, the lab will complete a Process Cost Estimation Form, and provide a written lab report in standard format. The report shall include:
  - Introduction
  - Equipment list
  - Procedure
  - Results of testing
  - Discussion
  - Recommendations and Conclusions
- The report will undergo technical review by sales, management, and technical services to determine if the process will be viable and worth undertaking by Miller. Results of the review will be documented and placed in the project file.
- If the testing and review results in a new process, rather than determining that the waste fits an existing process, a draft SOP will be prepared by MEC operations. The draft SOP will be used to undertake full scale process development, and will be finalized once the process is working properly.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

7.1 WQF086 Waste Qualification Form
7.2 NWT127 New Waste Testing and Development Log
7.3 PCE125 Process Cost Estimation Form

8.0 APPROVALS

Department Manager	IMS Coordinator

Tote Management Procedure

1.0 PURPOSE

As part of our ongoing commitment to our IMS program, all policies and procedures comply with ISO Standards 9001:2008, 14001:2004 and OHSAS 18001:2007.

The purpose of this procedure is to assist in the management of totes received at the MEC that require washing and / or cleaning.

2.0 SCOPE

This procedure applies to the management, shipment, receiving and tracking of all work involved in tote management

3.0 DEFINITIONS

Tote - 800, 1000, or 1200 liter container used to store liquid solutions

4.0 RESPONSIBILITIES

All Miller employees assigned to work with totes are responsible to follow this procedure.

5.0 PROCEDURE

5.1 Tote Receipt

Await sales order from supplier. Once sales order has arrived, supplier will schedule a drop off date. Upon arrival of shipment, the technician in charge will verify that a sales order has been received and that all totes received must be accounted for and inspected for damage. If any totes are damaged, pictures must be taken and sent to our supplier via email if possible or hardcopy prior to any work being done on that particular shipment. Totes should be inspected for damaged valves, cages, bottles, and the date they were put in service. Totes containing more than 3 liters of residual product must be identified, a picture of the fluid level must be taken and the product must be identified. Internal form ATS109 must be filled out and given to operations supervisor. If pictures must be sent, no work on these totes should be performed before approval received from supplier. The bottom section of form ATS109 must be completed by the supplier before work on the totes can begin.

5.2 Tote Preparation

Prior to washing the totes all labels should be peeled off, as well as any residual product drained. The residual product should be sampled and taken to lab for disposal coding. Totes containing more than 3 liters of residual product must be identified, a picture of the fluid level must be taken, the product must be identified and this information must be included to our supplier. The valve caps and valves should be removed and washed.

5.3 Washing the Totes

Move totes from storage area and put them in the tote washing trailer on the south pad of the MEC. Remove tote cap and rinse both the inside and outside of the totes. Remove any stains and or writing that may be on the totes.
Remove, clean the caps and valves and reinstall. Remove totes from trailer and segregate them into a cleaned aisle in the storage area..
Totes that are to be reused by Miller or sent to customers for use will be identified once they have been washed. The identification method used is a colored circular sticker attached on the clean tote.

A **GREEN** sticker denotes a tote that has been thoroughly washed, the valve inspected, cleaned and reinstalled which can be resold.

A **YELLOW** sticker denotes a tote that has been thoroughly washed, the valve removed, inspected, cleaned and reinstalled which cannot be sold because of discoloration or other cosmetic defects but that can be used internally by Miller for different waste streams deemed suitable to be stored in totes.

A **RED** sticker denotes a tote that has been rinsed and inspected for integrity and can be reused by Miller for organic waste only.

5.4 Tote Shipment

Confirm with supplier the type of valves that need to be put on the totes. Once confirmed, attach valves and await transporter. When transporter arrives, do a final inspection of the totes while loading the truck. Complete bill of lading, and tote shipment sheet (ASS116). Once paperwork is completed forward paperwork to operations supervisor.

Daily internal forms should be submitted to the operations supervisor at the end of each shift. Any shift where work is performed on the totes should be recorded on the time log.

All totes sent back to customer service for sale or reuse must be identified with a colored sticker. They must be checked prior to loading to ensure that all caps and valves are in place. Complete a Bill of Lading once the totes have been loaded.

6.0 REFERENCES

6.1 ISO Standards 9001:2008, 14001:2004 & OHSAS 18001:2007

7.0 ATTACHMENTS

7.1 ASS116 - Shipping Sheet
7.2 ATS109 –Tracking Sheet
7.3 OTL032 – Operations Time Log

8.0 APPROVALS

Department Manager

IMS Coordinator