

HWMA/RCRA STORAGE and TREATMENT PERMIT
for the
MATERIALS AND FUELS COMPLEX (MFC)

ATTACHMENT 6

Sections F-3 through F-5, Procedures to Prevent Hazards

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1 **F-3 Prevention and Preparedness (IDAPA 58.01.05.008; 40 CFR 264 Subpart C)**

2 **F-3(a) Equipment Requirements (IDAPA 58.01.05.008; 40 CFR 264.32)**

3 This subsection documents compliance with the preparedness and prevention
4 equipment requirements. The required equipment includes internal and external
5 communication equipment, emergency equipment, and water for fire control.

6 **F-3(a)(1) Internal Communications [IDAPA 58.01.05.008; 40 CFR 264.32(a)]**

7 MFC uses a site-wide emergency signal and paging system to alert facility
8 personnel of emergencies (ref. Attachment 7, Section G, Contingency Plan).
9 Attachment 7 shows the signals used and, for each signal, the type of emergency
10 and required action. All MFC personnel are trained to respond appropriately to
11 these signals. The siren signals are Site-wide, while radiation alarms are facility-
12 specific. Emergency messages can be sent over the MFC paging system.

13 **F-3(a)(2) External Communications [IDAPA 58.01.05.008; 40 CFR 264.32(b)]**

14 The means of communication between HWMA unit and emergency-response
15 personnel includes telephones, cellular phones, radios and fire-alarm pullboxes.
16 The dial 911 emergency telephone system enables an individual to dial the
17 numbers 911 on any business telephone, which will then put the individual in
18 contact with emergency-response personnel. For cellular phones, 911 is used. In
19 areas where cellular phones are not allowed business telephones, radios, or fire
20 alarm pullboxes are in place. Fire-alarm pullboxes automatically notify the INL
21 site-wide Fire Alarm Center. The Fire Alarm Center then communicates the
22 pullbox location information to Station No. 2 (located at the MFC) Fire
23 Department personnel.

24 **F-3(a)(3) Emergency Equipment [IDAPA 58.01.05.008; 40 CFR 264.32(c)]**

25 The MFC HWMA units have facility-specific emergency equipment available
26 (for their use in the unit) that is regularly inspected and maintained (ref.
27 Attachment F-3). This equipment, and its quantities, locations, and capabilities,
28 are identified in Attachment 4, Section F, and Attachment 7, Section G (ref.
29 Attachments F-4 and G-2). Emergency access routes to emergency-response
30 equipment for use at the HWMA units are shown in Attachment 7, Section G,
31 Contingency Plan, Attachment G-3.

1 **F-3(a)(4) Water for Fire Control [IDAPA 58.01.05.008; 40 CFR 264.32(d)]**

2 Water for fire control of non-reactive HW/MW fires is available throughout the
3 MFC site for use in each HWMA unit as identified in Attachment 7, Section G,
4 Contingency Plan. Water is not used for control of fires involving water reactive
5 HW/MW; the use of water to fight reactive metal fires would only accelerate the
6 fire. Instead, Class D extinguishing media, which is formulated for reactive metal
7 fires, is used to fight these fires. Water is used for fire control only if reactive
8 HW/MW is not involved, or if the fire department or facility manager determines
9 it is appropriate for the situation.

10 Fire control is evaluated at MFC facilities by the fire engineers. Certain facilities
11 are required to have a Fire Hazard Analysis, while all facilities are required to
12 have a Fire Safety Assessment. If conditions change the fire engineers use
13 procedures to modify the assessments. Each assessment describes the conditions
14 found in the building and the appropriate corresponding fire controls.

15 Controls such as isolation from water, carbon dioxide and Met-L-X fire
16 extinguishers, halon, and fire barriers may be appropriate for non-water fire
17 control.

18 **F-3(a)(5) Access to Communication or Alarm System [IDAPA 58.01.05.008; 40 CFR**
19 **264.34]**

20 Whenever hazardous waste is being handled personnel involved have access to
21 the types of alarms or communication systems as specified in Section F-3(a)(2).

22 **F-3(b) Aisle Space Requirements (IDAPA 58.01.05.008; 40 CFR 264.35)**

23 In accordance with National Fire Protection Association (NFPA) 101, *The Life*
24 *Safety Code (LSC) for Industrial Occupancies (National Fire Protection*
25 *Association) and Occupational Safety and Health Standards (OSHA)*, a minimum
26 of 3 feet of aisle space is maintained for any means of ingress or egress into the
27 MFC HWMA units. Placement of containers and process equipment within the
28 HWMA unit in accordance with this minimum aisle spacing requirement ensures
29 unobstructed movement of emergency response personnel, fire protection
30 equipment, spill control equipment, and decontamination equipment to any area
31 of the facility operation in an emergency.

1 RSWF staging/storage area and NFA store 8 ft x 8 ft x 20 ft cargo containers.
2 Each cargo container is accessible through side loaded or end loaded doors. The
3 cargo containers will be separated to allow for the doors to be opened to facilitate
4 container movement. Based on the restricted access within cargo containers and
5 the limited area (160 ft²) containers are centered along the long axes of the cargo
6 container to provide adequate inspection of containers. Adequate space will be
7 maintained between each container and containers on pallets. Also, adequate
8 space will be maintained for inspecting the entire area between and around cargo
9 containers, ISCs or other DOT type containers. A 3-ft aisle space will be
10 maintained between rows of containers stored on the pads.
11

1 **F-4 Prevention Procedures, Structures, and Equipment**

2 **F-4(a) Loading and Unloading Operations [IDAPA 58.01.05.012; 40 CFR**
3 **270.14(b)(8)(i)]**

4 HWMA unit container loading and unloading operations include (as applicable to
5 the specific unit) the following:

- 6 • Unloading containers of HW/MW from trucks or trailers and casks using
7 forklifts, mobile cranes, or facility cranes
- 8 • Moving containers from HWMA storage areas to the HWMA unit process
9 areas and/or to another HWMA unit storage or treatment facility
- 10 • Daily inspection following transfer operations.

11 Hazards that may result from loading and unloading operations are minimized by
12 the use of trained and qualified rigging and hoisting operators, trained material
13 handling personnel, proper handling of containers and inspection of containers as
14 described in Attachment 1, Section D, Process Description.

15 **F-4(b) Run-On and Run-Off [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(ii)]**

16 **F-4(b)(1) Indoor HWMA Units**

17 Containers of HW/MW are elevated off the floor during storage (e.g., stored on
18 secondary containment pallets or skids or by container design), ensuring that the
19 containers do not come in contact with runoff from HW/MW handling operations
20 or run-on from precipitation. Note: During processing, containers may be staged
21 on the floor as required by the process.

22 **F-4(b)(2) Outdoor HWMA Unit (RSWF, RSWF Staging/Storage Area and NFA)**

23 MW stored in the RSWF is contained within welded cathodically protected steel
24 liners with the tops of the liners above (approximately 4 inches) ground level. The
25 RSWF is graded to slope gently from the centerline to the parallel sides. This
26 serves to prevent run-on of precipitation toward the liners and facilitates run-off
27 of precipitation away from the liners.

28 Waste containers stored at RSWF staging/storage area and NFA are stored within
29 cargo containers, ISCs, or other DOT type containers that prevent the containers
30 from coming into contact with precipitation. The cargo containers are kept closed,
31 which effectively seals the containers against precipitation. The cargo containers

1 are designed with skids keeping the cargo containers elevated. The ISCs are
2 designed to sit on the ground. Any waste drums within the ISCs will not come
3 into contact with run-on liquids, as the ISCs are designed to be waterproof.
4 Additionally the ISCs are kept closed to prevent accumulation of precipitation.
5 Other DOT type containers used to store containers will be maintained closed and
6 elevated to keep containers from coming into contact with precipitation. If
7 pooling/puddling is identified around container(s), container(s) will be relocated.

8 The RSWF staging/storage area and NFA asphalt pads are approximately 1 ft
9 above the adjacent soil. Routine preventative maintenance will be conducted to
10 ensure snow accumulation is removed from the areas around HW/MW stored on
11 pads.

12 **F-4(c) Water Supplies [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(iii)]**

13 Contamination of water supplies due to HWMA unit operations is highly unlikely
14 because:

- 15 • HW/MW is stored in sealed containers; HW/MW with free liquids is
16 stored in containers/tanks with secondary containment.
- 17 • HWMA units are >50 ft from the nearest site production/drinking water
18 well.
- 19 • The MFC site is maintained with the necessary grading and ditches to
20 channel run-off to the Industrial Waste Pond.
- 21 • MFC is more than 10 miles removed from the nearest surface water (the
22 Big Lost River) protected by the Clean Water Act.
- 23 • The water table of the Snake River Plain Aquifer is > 600 ft below grade.

24 **F-4(d) Equipment and Power Failure [IDAPA 58.01.05.012; 40 CFR
25 270.14(b)(8)(iv)]**

26 Equipment failures are minimized and prevented by thorough preventive
27 maintenance and servicing programs. Possible equipment failure during HW/MW
28 handling activities is primarily limited to crane or hoist breakdowns in the
29 HWMA units. Crane breakdown could encompass motor, mechanical, and
30 structural failure. Failures of the cranes or hoists are minimized through routine
31 maintenance.

1 Forklift failure could encompass motor, hydraulic, mechanical, and structural
2 failure. Rigging tackle failure could encompass breakage or deformation of slings,
3 wire ropes, shackles, hooks, or other lifting devices. Forklift failure is minimized
4 by routine maintenance and pre-use equipment checks. Delays in unloading and
5 storage of waste containers as a result of forklift failure are also minimized
6 because other forklifts are available if one is out of service.

7 To mitigate effects of electrical power failures:

- 8 • Ongoing operations (such as movement of HW/MW containers and
9 treatment systems in operation) will be secured and placed in a safe
10 condition
- 11 • Open containers of HW/MW will be closed and secured
- 12 • Automatic valves and controls in HW/MW treatment systems will fail in
13 safe positions (as they are designed to do in case of power failures).

14 HWMA unit operations personnel complete facility shutdown operations, as
15 necessary, to place equipment and waste in a safe standby configuration.

16 **F-4(d)(1) Equipment and Power Failure at RSWF, RSWF Staging/Storage Area and**
17 **NFA**

18 The casks, forklift, and cranes used at the RSWF, RSWF staging/storage area and
19 NFA are uniquely constructed or purchased to perform operations at the RSWF,
20 RSWF staging/storage area and NFA and, as a result, equipment failure is
21 minimized. The casks used at RSWF have very few moving parts with no
22 electrical components to fail.

23 There are no electrical power requirements for RSWF staging/storage area or
24 NFA.

25 **F-4(e) Personnel Protective Equipment [IDAPA 58.01.05.012; 40 CFR**
26 **270.14(b)(8)(v)]**

27 HW/MW is received at HWMA units in closed containers. HW/MW containers
28 are only opened for the removal or transfer of the HW/MW at the time of waste
29 verification, repackaging, and/or treatment. When HW/MW is exposed to the
30 atmosphere during repackaging and/or treatment, personnel are protected by
31 personnel protective equipment (PPE), as necessary.

1 **F-4(f) Releases to the Atmosphere [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(vi)]**

2 In the event of an airborne release from a waste management unit addressed in
3 this permit, the ventilation system in the building will direct hazardous
4 constituents to the building's HEPA filter off-gas system, which minimizes
5 releases to the atmosphere.

6 At HFEF (MFC-785) the cell exhaust system draws air from contaminated areas
7 around the decon cell into the decon cell and from there into the exhaust system
8 ducts. Extensions to the cell exhaust system provide exhaust air flow from the
9 Waste Characterization Chamber and its ancillary glove boxes. Gaseous exhaust
10 then passes through at least two stages of HEPA filters. In addition, all containers
11 are maintained closed while in storage, except for adding or removing waste.

12 At RSWF (MFC-771) air emissions are prevented by the waste being sealed
13 within carbon steel liners. In addition, the liners contain containers that are also
14 sealed. The liners are either welded shut or fitted with a blind flange, as
15 applicable. The opening of waste containers is not allowed at the RSWF and
16 therefore, is not a potential cause of air emissions.

17 SCMS consists of three separate buildings referred to as MFC-793, -793C, and -
18 793G.

19 MFC-793 ventilation system consists of an exhaust fan, a smaller auxiliary
20 exhaust fan, two main HEPA filter banks, an exhaust stack, and associated
21 ductwork and dampers. The fan takes a suction from the SCMS High Bay and the
22 SMCS Low Bay through two HEPA filter banks. The fan discharges to the
23 outside through the exhaust stack. Dual banks of filters were installed to provide
24 redundancy in the event of filter failure or excessive fume loading. The
25 ventilation system draws air through the water-wash vessel and passes it through a
26 venturi scrubber and cyclonic liquid separator, a moisture separator and air heater
27 before discharge to the HEPA filters.

28 MFC-793C is a container storage building, but may also contain a containment
29 enclosure tent for opening various radiologically contaminated or mixed waste
30 containers for examination, maintenance, repackaging, or container treatment. If a
31 tent is installed in the building, it would be provided with negative pressure and
32 the ventilation system for the tent would include HEPA filtration.

33 MFC-793G is a container storage building. All containers are maintained closed
34 while in storage, except for adding or removing waste.

1 SSB (MFC-703) is a container storage building. All containers are maintained
2 closed while in storage, except for adding or removing waste.

3 RSWF staging/storage area and NFA are container storage areas. All waste
4 containers are maintained closed while in storage.

1 **F-5 Ignitable, Reactive, and Incompatible Wastes [IDAPA 58.01.05.012; 40 CFR**
2 **270.14(b)(9)]**

3 Since the HWMA units may handle ignitable and reactive HW/MW, units
4 managing this waste are designed, constructed, and operated to prevent accidental
5 ignition or the reaction of the HW/MW with water or other incompatible material.

6 **F-5(a) Prevent Ignition or Reaction of Ignitable or Reactive Waste [IDAPA**
7 **58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(9) and 264.17(a)]**

8 Engineering and administrative controls are in place at the HWMA units that
9 manage ignitable or reactive HW/MW to prevent the accidental reaction or
10 ignition of ignitable and reactive HW/MW and include the following:

- 11 • Protecting HW/MW containers from physical damage by minimizing
12 handling
- 13 • Not storing incompatible materials together such as water (other than the
14 industrial service water), corrosives, oxidizers, or halogenated solvents in
15 the area
- 16 • The RSWF staging/storage area and NFA may store sodium contaminated
17 solid items, which will be stored in high integrity water-tight containers.
18 These containers are not opened for addition or removal of waste while in
19 the RSWF staging/storage area and the NFA.
- 20 • Sodium contaminated items may be stored in cargo containers designated
21 for their storage.
- 22 • Prohibiting sources of heat or ignition in the storage areas where ignitable
23 or reactive HW/MW are stored
- 24 • Smoking is not allowed in the HWMA units and “No Smoking” signs are
25 conspicuously posted
- 26 • Restricting access to HW/MW storage areas to trained personnel
- 27 • Keeping doors to HWMA units closed (when not in use) to prevent
28 precipitation from accumulating in the storage area
- 29 • Doors to cargo containers are kept closed to prevent precipitation from
30 accumulating in the storage area
- 31 • Using only properly trained personnel to place or remove HW/MW from

1 the storage areas

2 • When venting drums use only non-sparking tools and provide monitoring
3 of gases

4 • Work control documents.

5 **F-5(b) General Precautions for Handling Ignitable or Reactive Waste and Mixing of**
6 **Incompatible Waste [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR**
7 **270.14(b)(9) and 264.17(b)]**

8 The design and operating practices at the HWMA units that manage ignitable or
9 reactive HW/MW prevent reactions that:

10 • Generate uncontrolled extreme heat or pressure, fire, explosions, or violent
11 reactions

12 • Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient
13 quantities to pose a risk of fire or explosion or to threaten human health or
14 the environment

15 • Damage the structural integrity of containers, tanks systems or secondary
16 containment systems.

17 These practices and design features are intended to separate and protect waste
18 from sources of ignition, reaction, or spontaneous ignition, as follows:

19 • Incompatible waste is segregated as described in Subsection F-5(d).

20 • When containers are required to be opened for the purpose of HW/MW
21 waste verification, repackaging, and/or treatment, only the containers in
22 process will be opened.

23 • The atmosphere in the area where containers are opened is controlled to
24 keep HW/MW confined. If necessary, containers will be opened in
25 atmospheres that have appropriate ventilation or atmospheric controls with
26 respect to areas where unopened containers or personnel are located.

27 • All equipment and wiring complies with applicable NFPA codes. Portable
28 electric tools used are double-insulated or have ground fault interruption
29 (GFI) circuit protection.

- Open-flame cutting, welding, or other similar spark or ignition sources will not be allowed inside the HWMA unit unless repair is required on a piece of equipment, in which case the equipment and the open flame or spark source will be isolated to the extent feasible from the HW/MW. To the extent necessary, the HW/MW will be transferred to one of the HWMA unit storage/treatment areas where potential ignition sources do not exist.
- Routine inspections of HWMA unit container storage/process areas provide regular assessment of storage conditions and early identification of potentially hazardous situations.

F-5(c) Management of Ignitable or Reactive Waste in Containers [IDAPA 58.01.05.012 and 58.01.05.00 8; 40 CFR 270.15(c) and 264.176]

MFC is located approximately 4 miles from the nearest INL facility property line. A buffer zone surrounding the MFC, and including the HWMA units, is greater than 50 ft from the property line, in compliance with IDAPA 58.01.05.008 and 40 CFR 264.176.

F-5(d) Management of Incompatible Waste in Containers [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.15(d) and 264.177]

Prior to HW/MW shipment to a HWMA unit, the generator provides information to the HWMA unit manager (or designee). The HWMA unit manager or designee reviews this information for conformance with the Permit. This provides a check as to whether or not the generator is placing incompatible HW/MW together in a single container or in a single shipment (both of which are prohibited). All HW/MW received at a HWMA unit is packaged by the generator. Information regarding the review of generator-supplied information for compatibility is addressed in Attachment 2, Section C, Waste Analysis Plan.

If noncompliant conditions are discovered by HWMA unit operations personnel during the course of storage, repackaging, and/or treatment, the generator is contacted, and the situation is evaluated and documented on a case-by-case basis. To the extent possible, the noncompliant condition is remedied, at least to the point where the HW/MW can be safely returned to the generator.

HW/MW generated at a HWMA unit as a result of repackaging, and/or treatment, is packaged in compatible containers and with compatible HW/MW if consolidated. No HW/MW generated at a HWMA unit is placed in containers with HW/MW, or HW/MW residue, that could be potentially incompatible.

1 If a container of HW/MW received at a HWMA unit is incompatible with any
2 HW/MW or materials stored nearby, it will be separated from the other HW/MW
3 or materials, or isolated from them by means of a dike, berm, wall, or other
4 device.

5 **F-5(e) Management of Ignitable or Reactive Waste in Tank Systems [IDAPA**
6 **58.01.05.012 and 58.01.05.00 8; 40 CFR 270.16(j) and 264.198]**

7 Ignitable and reactive HW/MW that is placed in the tank system used to
8 deactivate the HW/MW (i.e., at SCMS) is managed to ensure that the waste will
9 not react or ignite outside of the designed treatment process. The headspaces of
10 tanks holding Na/NaK are typically filled with inert gas, nitrogen for example, to
11 minimize the potential for an air to waste reaction. The controlled reaction of
12 ignitable and reactive HW/MW in SCMS tank systems meets the requirements of
13 IDAPA 58.01.05.008 and 40 CFR 264.198 and 264.17(b).

14 **F-5(f) Management of Incompatible Waste in Tank Systems [IDAPA 58.01.05.012**
15 **and 58.01.05.008; 40 CFR 270.16(j) and 264.199]**

16 Incompatible HW/MW will not be placed together in SCMS storage tanks or tank
17 systems. As identified above, SCMS tank systems are designed specifically to
18 react ignitable and reactive HW/MW with water under controlled conditions.