



# **Minnesota Pollution Control Agency**

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## **Carcass Disposal Plan Foot and Mouth Disease (FMD)**

**August 12, 2003**

## **Introduction**

The following is a plan specific to carcass disposal of Foot and Mouth Disease infected animals. This is part of Appendix C: Biological Event of the Minnesota Pollution Control Agency's Standard Operating Procedures for Natural Disasters or Terrorism Incidents. MPCA staff will assist and support the Board of Animal Health (BAH) with disposal of Foot and Mouth Disease infected carcasses. Since the disease is highly contagious disposal must be efficient and effective. The two preferred methods of disposal are burial and burning of the carcasses. The following plan describes the criteria for each disposal method, how to do it and who will perform the operation. The MPCA will respond efficiently and effectively to dispose of carcasses and reduce the spread of the disease. In addition, the MPCA will utilize many contractors to help perform the defined tasks.

## **Safety Considerations**

Safety is very important and a site safety plan is required for the operation. See Attachment 1: Generic Safety Plan, for MPCA's safety plan template for each operation. This plan will be available at each site and will be a part of the daily safety briefings. Topics include heat/cold stress, slip and trip hazards, working around heavy equipment, personal protection, disinfection, excavation hazards, chemical hazards, and on-site agricultural chemicals. The disposal foreman controls all aspects of the disposal operation. The entire site is under the control of the area veterinary.

## **Method Selection**

To minimize threat of viral spread, disposal of Foot and Mouth Disease infected carcasses on site by burial is strongly preferred. The following available methods are listed in order of preference:

1. burial on the infected premises
2. burial on a neighboring infected premises
3. burning on the infected premises with a constructed pyre and ashes buried on infected premises
4. burning on the infected premises with air curtain incinerator and ashes buried on infected premises
5. burial at a landfill or other suitable premises

The decision process begins when the MPCA is notified of the diagnosis of a "highly likely". MPCA staff will arrange for an on-site visit of the farm site to assess the suitability of the land for burial or burning. Burial is the preferred method of disposal because it is quicker, cheaper, and easier than other methods. However, large portions of Minnesota do not have adequate depth of soil. General factors to be considered when deciding the disposal option include:

- Level of seasonal high water-table and topography of soil/rock formation;
- Nature and number of carcasses and other material for disposal;
- Availability of land suitable for burial or incineration at or adjacent to the infected site;
- Proximity to surface water, wells, and drainage tiles and ditches;
- Presence of utilities, e.g. water, gas, electricity, telephone lines, drainage, sewerage, other improvements or structures, including aerial lines;
- Accessibility to disposal site by heavy excavation and transport vehicles;

- Proximity to populated areas and dwellings;
- Fire restrictions and weather conditions including prevailing winds;
- Subsequent plans for the use of the area, e.g. the soil may be unstable where burial pits are placed.

### **Personnel Required**

Upon the notification, all MPCA emergency response team staff will be alerted and the following type of people will be dispatched: site locator, staging area coordinator, disposal foreman, and numerous contractors. The method of disposal will be determined before or during the time a staging area is established. MDA will arrange for the dispatch of a disinfection team. These jobs are explained in more detail below.

*Staging Area Coordinator* – This person(s) will select an equipment staging area site quickly and located conveniently to the affected premise. All contractors and their equipment will be received, tracked and dispatched here. Attachment 2: MPCA/MDA Staging Area Criteria, describes the staging area and it's needs. The staging area coordinator will have at a minimum of two assistants one from each contractor assigned to the response to help track contracted resources. This person communicates directly with the Disposal Foreman(s), providing the resources he/she needs. In addition, they will work on procuring additional resources from local, county, state and private sources.

*Disposal Foreman* – initially this person will be a MPCA Emergency Response Team member. This person requests resources from the Staging Area Coordinator and manages and oversees the entire disposal operation of initially one farm and possibly many farms in an infected zone.

*Site Locator* - this person will consult maps, local experts, and the farmer, and decide what method and physical location will be used for disposal if the highly likely diagnosis is communicated.

***Burial Team***- this team consists of 3-6 contracted personnel and their heavy equipment, as listed below. They will excavate a pit and bury the carcasses.

Foreman  
1-2 Operators  
2-3 Laborers  
Excavator  
Front-end loader

***Fuel Team***- this team consists of contracted personnel and their fuel hauling truck/trailer, as listed below. They deliver railroad ties, wood pallets, other wood and coal to site from stockpile and procure additional fuel.

2 Trucks/Trailers and drivers hauling railroad ties  
2 Dump trucks and drivers hauling coal  
1 Local fuel oil delivery truck and driver

*Construction Team-* this team consists of a minimum of 6 or 7 contracted personnel and the following equipment listed below. They will build the fire platform(s), load carcasses, tend the fire, and bury the ash.

- 1 Foreman,
- 2 Equipment operators
- 3-4 Laborers
- Front-end loader
- Logging Grappler

*Disinfectant Team-* disinfects other Team personnel and equipment, as needed. This team is planned for and provided by Minnesota Department of Agriculture. This team consists of a minimum of 3-4 people and necessary equipment.

- Foreman
- Driver
- 1-2 Laborers
- Vehicle, water, disinfectant, power sprayer, personnel showers, etc.

### **Carcass Management Prior to Disposal**

Decay within the carcass probably will inactivate the virus within the animal by production of lactic acid by decay. However, there is the possibility of spread of virus from the outside skin of the animal and adhering manure by scavengers, wind, etc. Carcasses should be buried or burned as soon as possible after killing. All carcasses will be sprayed with disinfectant before disposal. Scavengers should be controlled to prevent the spread.

### **Burial**

#### **On the Infected Premises**

Disposal of animal carcasses and other infectious material may involve some adverse environmental consequences. It is important for the environmental aspects of proposed disposal activities to be properly considered to minimize pollution from disposal. However, if at all possible, disposal will occur on the infected premise to prevent spread of the disease. Once a suitable location is sited on the property this needs to be communicated to the Veterinarian in charge and the property owner for approval or consultation.

#### **Off the Infected Premises**

Where burial is not practical on the infected premises, consider transporting carcasses and/or infectious material to an adjacent farm site for disposal by burial. Other candidate off-site areas may include sanitary landfills, closed landfills owned by the State, other closed landfills or demolition landfills. This may be occur when available space or water table effectively prevent on-site disposal, or where infected premises are adjacent or in close proximity to a potential common disposal site. If consolidating carcasses from numerous farms, move the carcasses to the center of the infected zone.

Transport should be in a leak-proof container, such as a large dumpster, lined with heavy polyethylene and tightly covered, or a leak-proof trailer with end-gate gaskets. It should not be overloaded — one to two feet (depending on distance to be traveled and temperature) should be

left clear for expansion of carcasses. Carcasses should not be slashed before loading. Vehicles should travel slowly to avoid splashing of contaminated material and should be escorted to minimize the chances of accidents and to prevent breaches of biosecurity. The escorting officer must carry a supply of an approved disinfectant and basic equipment to deal with minor spills en-route. All vehicles must be cleaned and disinfected before leaving the infected premises and after unloading at the disposal location. MPCA emergency responders maintain vendor lists of dumpsters and truck trailers that could be used for these purposes.

### **Site Selection**

The lead MPCA emergency response team member will activate a site locator as soon as a highly likely diagnosis is made. This person will be knowledgeable of soil and groundwater conditions and work with the landowner, the county resources, U of M Extension or National RCS agents, and others to determine a burial or burn disposal location. Attachment 3: MPCA Burial Checklist will be helpful in the field. Test trenching, borings, or other site investigation may be done while waiting for presumptive test results. Important considerations for burial site selection include:

- *depth to water table*, allow for 3 feet of cover or use a mound, allow 3 feet of burial chamber per layer of cows, allow 3 feet from bottom of trench to seasonal high water table in tight soils and 5 or more feet in loose soils;
- *presence of fractured bedrock/karst* conditions under site;
- *soil type and permeability*, fine grained clayey soils preferred;
- *slope of the land* and drainage to and from the pit area, select high ground where possible;
- *distance to surface water and wells*, 150 feet to a private well, 1500 feet to a public water supply well, further if possible with sandy or gravel soils;
- *access to the site* for both equipment to dig the burial pit and for the delivery of carcasses or other materials to be buried;
- *proximity to buildings*, especially houses, neighbors, or public lands including roads;
- *construction considerations*, avoid rocky areas (slows digging and increases costs) but select soils with good stability capable of withstanding the weight of equipment used to construct and fill the pits. Use a “double mound” method of storing excavated top soil separately from excavated subsurface soil. Surface runoff should be prevented from entering the pit by the construction of diversion banks if required. Similar banks should be constructed to prevent any liquids escaping from the burial site. Fencing may be necessary after disposal to exclude animals until the site is safe for use.

### **Groundwater Monitoring**

At each disposal location, a groundwater monitoring plan will be developed. An inventory of on-site wells, their locations, construction and depth will be inventoried. Before burial or at the time of burial, water samples will be collected for laboratory analysis. Specific parameters will be determined in cooperation with the Minnesota Department of Health (MDH). Water samples will be collected and analyzed after disposal to monitor for any drinking water impacts.

### **Earth-moving Equipment**

The preferred equipment for digging burial pits is a backhoe. This equipment is the most efficient available for the construction of long, deep, vertically sided pits. Other advantages include the ability to easily store topsoil separate from subsoil and the equipment can be used, if required, to fill the pit with carcasses or other materials and closing the pit without disturbance of the carcasses.

Loaders, bulldozers, road graders and backhoes (for small jobs) may be used if excavators are unavailable. With the exception of backhoes, all other equipment requires the continual movement of the machine over the site while digging the pit. Excavators and backhoes essentially remain in a fixed position while digging, hence they move soil faster, with less cost and less damage to the site surrounding the pit. If ground is frozen a frost claw or similar implement may be needed.

### **Burial Pit Construction**

Gopher State One Call must be notified of the planned excavation at (651) 454-0002. The hired emergency response contractor that is serving as the main contractor will make this call.

The dimensions of the burial pit will be dependent on the equipment used, site considerations and the volume of material to be buried. The preferred dimensions are for pits to be as deep as practically possible (reach of machinery, soil type and water table level being the usual constraints), with vertical sides. The pit should be no wider than can be filled evenly with the material to be buried with the available equipment. The aim should be to avoid having to move carcasses once they are in the pit. The length of the pit will be determined by the volume of material to be buried.

In designing the dimensions of the pit, consideration needs to be given to the method to be used to fill the pit with carcasses or other material. Generally carcasses will be unloaded from truckbeds dropped into the pit by a loader or pushed into the pit by a bulldozer from the side. Excavators can be used to fill pits with carcasses placed close by the pit. This is especially useful if soil stability does not permit trucks or other heavy equipment to operate close to the pit edge.

The following guidelines may be of assistance in determining the pit volume required. The base of the pit must be at least 3-5 feet above the water table. When conditions allow plan for a greater separation distance to groundwater.

#### **14 Feet or Greater to Groundwater**

If groundwater is 14 feet from ground surface, then leave 5 feet of separation to groundwater, use 6 feet of burial chamber for two layers of cows, and leave 3 feet of cover material.

#### **Less Than 14 Feet to Groundwater**

If groundwater or bedrock is less than 14 feet, the following variations could be utilized

1. 3 feet of good soil separation, 3 feet chamber of one layer of cows, plus 3 feet cover = 9 feet
2. 3 feet of good soil separation, 6 feet chamber of two layers of cows, mound cover = 9 feet

On average, allow a fill capacity of about 2 cubic yards for each adult cow or 5 adult sheep or pigs. In addition, at least 3 feet of soil is required to cover carcasses, to ground level or top of mounded soil.

	<b>Cover</b>	<b>Bottom of trench to ground water</b>	<b>Cubic yards per animal</b>	<b>Cubic yards per 100 animals</b>	<b>Length needed for 100 animals for 9 ft. wide x 6 ft. deep burial chamber *</b>
<b>Cow</b>	>= 3 ft.	3-5 ft.	2 yd <sup>3</sup>	200 yd <sup>3</sup>	100 feet
<b>Pig</b>	>= 3 ft.	3-5 ft.	0.4 yd <sup>3</sup>	40 yd <sup>3</sup>	20 feet
<b>Sheep</b>	>= 3 ft.	3-5 ft.	0.4 yd <sup>3</sup>	40 yd <sup>3</sup>	20 feet

\*A 6 foot deep burial chamber will require 9 foot excavation to allow for 3 foot cover

Some pit capacity must be reserved for contaminated bedding, straw, feed, and manure from the barns of infected animals, if they are not composted. This material may pack well around and between carcasses in the pit.

When closing the pit, clayey surplus soil should be heaped over the pit as an overfill cap. The weight of soil acts to stop carcasses rising out of the pit due to gas entrapment, prevents scavengers digging up carcasses, helps filter out odors and assists in absorbing the fluids of decomposition. Do not pack the cap down, because decomposition gas will crack a tightly cracked cover and allow bubble and fluid loss. Consider whether vent pipes or similar venting is needed. After pit subsidence it will be necessary to replace any topsoil not utilized during pit closure.

### **Gas Production**

Gas production from decomposition within unopened carcasses may result in considerable expansion in the volume of the buried material to the extent that the surface of the closed pit may rise and carcasses may be expelled from the pit. To prevent this, the stomach of large carcasses should be cut open to permit escape of gas. There appears to be little benefit in opening small animal carcasses. This should be undertaken at the side of the pit, under no circumstances should personnel enter the pit during filling.

Lime may be added to pits to prevent earthworms bringing contaminated material to the surface after pit closure. First cover the carcasses with approximately 16 inches of soil then add a layer of slaked lime (Ca(OH)<sub>2</sub>) before filling is completed. Lime should not be placed directly on carcasses because it slows, and may prevent, decomposition. Consider personal safety protection during lime placement.

### **Long-term Monitoring**

Inspection of the burial site after closure is recommended so that appropriate action can be taken in the event of seepage, sinking or other problems. The objective is that the site should return to its original condition. Before restocking is permitted the burial site should be again inspected to

ensure there is no possible biological or physical danger to stock. This would normally be several months following pit closure.

On site drinking water wells should be sampled as determined in the groundwater sampling plan.

### **Burning**

Burning should be considered only when burial is not possible because of high water table, extremely rocky conditions, or other circumstances. Available methods include pyres, existing incinerators and air curtain incinerators. Of these, pyres are practical for situations with time constraints and numerous carcasses. Attachment 4: MPCA Cremation Checklist can be useful for field use.

### **Pyres**

The principle is to place carcasses on a platform of sufficient combustible material, ensuring the arrangement of fuel and carcasses allows adequate air flow to enter the pyre from below, to achieve the hottest fire and the most complete combustion in the shortest time. Ashes and debris are then buried on site.

### **Site Selection**

Important considerations are:

- *Depth to water table*, there should be sufficient depth to groundwater to allow ash burial, 3-5 feet with most soils.
- *Stable soil*- choose a flat or high area, soils should support equipment to construct the pyre and maintain the fire and for the delivery of fuel and livestock, carcasses or other materials to be burned;
- *Fire hazard*, there should be an adequate fire break around the pyre — consult with the Minnesota Department of Natural Resources and local fire chief for advice and permits, and for fire equipment to standby but not on the site during the burn;
- *Access to the site* for delivery equipment and equipment used to maintain the fire;
- *Proximity*, consider the possible effects of heat, smoke and odor that will be generated by the fire on nearby structures, under and above ground utilities, roads and residential;

### **Preparation of Fire Bed**

The fire line should optimally be a platform sited at 90 degrees to the direction of the prevailing wind to maximize ventilation. Fuel supplies should be stacked and the fire built from the upwind side and carcasses loaded from the opposite side. Platforms should usually be built on ground surface to facilitate ventilation of the fire with ash buried in a trench dug later or under a mound. A platform can be built over a shallow trench to facilitate ash disposal, but that may lead to water problems in the trench if it rains.

- *Width* of the fire-bed is governed by the size of carcasses to be burnt, for adult cattle allow 8-10 feet. A double width fire line could be built only if equipment capable of tending the fire from one side in smoke will be available.
- *Length* — allow 3 feet per adult cow. If there is more than one line, allow sufficient space between fire lines for tending and refueling the fires

Stake out the fire platform area 8-10 foot wide by 300 foot long for 100 cows. To elevate the fire-bed, lay rows of heavy timbers parallel to the prevailing wind and then another layer of timbers crossing the bottom layer in between the gaps lay bales of straw. Then lay other fuel, such as lighter timber, chunks of coal and a full layer of straw. Then lay a third layer of timbers. Use the “inside” logging trailer with grappling boom to roughly place ties or timber in place. Adjust the placement by hand, as needed.

### **Fuel Sources**

Several types of wood fuel can be used for fueling the fire. They include creosote railroad ties, green, softwood timber, waste wood from paper mills, wood pallets, and dried cord wood. Other useful fuels include coal, diesel or fuel oil for starting the fires, and straw. Some of these products are more abundant than others and are not found equally throughout the state. MPCA emergency responders maintain lists of vendors through out the state that can provide fuel. This list will need to be updated annually for accuracy.

Weathered creosote railroad ties can be obtained from railroad companies, landscapers, or tie brokers. A 40-foot flatbed would carry about 35,000 pounds or about 40 40-foot-long poles. It is important to distinguish creosote from pentachlorophenol (PCP) poles. Do not use PCP poles. Weathered cedar cross arms may also be available and used. Green softwood timber can be obtained from paper mills. Also mill slab, bark, sawdust and other wood byproducts could be useful too and obtained from paper mills. Wood pallets can be obtained from pallet manufacturers or reconditioners. Dried hardwood can be obtained from a local firewood supplier. DNR Forestry has supplier contacts and will be placed into fuel supply logistics position.

Coal chunks can be obtained from suppliers in the Twin Cities or from facilities from North Dakota. Straw will be procured locally and on the infected premise. Local government staff will be expected to assist with securing this resource. Fuel oil can be obtained from local sources. Approximately 5 gallons of fuel oil is needed per cow. A local fuel oil delivery truck could dispense the fuel directly or stage 55-gallon drums and a front-end loader can orchestrate the fuel dumping on the pyre.

### **Fuel Requirements**

Local availability will govern the type and amount of various fuels required. The following can be used as a guide per adult cow. For fuel estimation, one adult cattle carcass is equivalent to 4 adult pigs or shorn sheep, or 3 adult woolly sheep.

- straw 1-3 bales or 1 big roll
- small timber 50 pounds (pallet wood, slab wood, etc.)
- coal 500 pounds method B -1000 pounds method A, large chunks better than small
- fuel oil or diesel five gallons per carcass, DO NOT USE GASOLINE. Retain reserve supplies.

(Consideration may be given to dried corn, which has fuel value similar to wood. Perhaps corn could be blown into the fire from the side as the other fuels burn down)

Tires would provide long-lasting fire source in a pyre, however, tires create excessive air pollution and steel belted tires leave extensive tangles of hard-to-manage wire after burning. This will be difficult to bury and will interfere with later use of the area. Therefore, we do not plan on using tires for fuel.

### **Equipment Required for Each Infected Premise**

The following list of equipment is needed to handle the fuel at each infected premise. All supplies will be delivered to the infected premise staging area which is outside the quarantined area.

- Logging trailer with grappler to transport fuel within the infected premise and to place carcasses on the pyre
- Front-end loader or backhoe and small dump truck to transport fuel within the infected premise to replenish fire as needed
- Drums and mobile petroleum storage tanks to store delivered fuel
- Skid steer loader to move bedding straw, etc. from barn to fire site or compost pile

### **Method A**

Roll big straw bale out inside the shallow trench. Place 8-foot ties across trench at approximately 3-foot intervals. Place pallets across trench to provide quick fire and platform for coal. Place a layer of straw over the pallets. Place a several-foot-thick layer of coal on straw. Place carcasses, more coal, douse sufficiently with fuel oil.

### **Method B**

The first row of 8-foot-long timbers are laid parallel to the prevailing wind, one-half to one timber-width apart. Place straw and slab wood between first row of logs. Place second row of timber logs perpendicular to the prevailing wind. Using a front-end loader place slab wood, saw dust, coal, bark wood between second row logs. Place a third row of timber. Place the carcasses using a logging trailer grappler or a front-end loader.

Guard against bird and other scavengers before ignition. Stack carcasses across the fire-bed with larger carcasses on the bottom and smaller carcasses on top, preferably with the carcasses on their backs and alternating head to tail, if possible. Excavators or front-end loaders or logging trailers with grappling booms are best, but lifting jibs, tractor forklifts or cranes and chains can be used. After placing carcasses on the fire-bed the extensor tendons may be cut to prevent legs being extended during burning.

When loading of the carcasses is complete and weather conditions suitable, saturate the fire-bed and carcasses with diesel or heating oil (NOT GASOLINE). Prepare ignition points about every 10 yards along the length of the fire-bed. These can be made of rags soaked in fuel oil or kerosene.

Remove all vehicles, personnel and other equipment well away from the fire-bed. Start the fire by walking into the wind and lighting the ignition points along the way. The fire must be attended at all times and be re-fueled as necessary, use a tractor with a front mounted blade or a front-loader. Ensure any carcasses or parts thereof that fall off the fire are replaced on the fire. A

well constructed fire will burn all carcasses within 48 hours. The ashes should be buried and the site restored as well as possible.

### **Air Curtain or Pit Burning**

Air curtain incineration involves digging a trench. A chamber is constructed of preformed concrete slabs and refractory curtain. A high capacity fan and manifold manifold system directs volumes of air from one side of the trench at high velocities. The air travels across the top of the fire and it is then drawn into the fire down the opposite side of the trench. The angle of the airflow results in a curtain of air acting as a top for the incinerator and provides oxygen that produces high burn temperatures. Sufficient hot air recirculates within the pit achieving complete combustion. Additional fuel is required to initially establish combustion, but once operating the continuing fuel requirement is reduced. The fire burns extremely hot, consumes fuel quickly, and produces little smoke.

This may be an option for sites where enough land is not available for burial or platform burning; or a site with down-wind nearby population. Pit burners may only be suitable on a relatively small scale. They would appear to be especially suited to pigs and fat sheep whose high fat content would support burning. Once stable continuous burning is achieved in the pit, it becomes very efficient. Pit burning has the advantage of being transportable, but time for transport and set-up would likely be greater than 24-48 hours.

#### **Pit burn site selection**

- soil- pit construction should not be attempted in sandy soils, use of this method relies on having stable, vertical pit walls to support combustion air equipment and heavy equipment to deliver carcasses and additional fuels.
- Ground water table- depth of pit should be such that ground water does not seep into the pit
- Pit constructed based on prevailing wind direction, to aid in adding fuel and carcasses to the pit and to avoid blowing air against the wind.
- Dimension of pit- if the pit is too wide the efficiency of the air curtain is affected, and the air blows across and out instead of down.
- Possibly use a trench box, or stacked jersey barriers or similar to provide stability in pit

### **Other Waste Products**

All contaminated and potentially-contaminated carcasses, animal products, food products and wastes will be disposed of by one of the methods outlined above. However, specific disposal considerations apply to the materials listed below.

### **Manure Lagoons**

All liquid manure will be cleaned from the barns and collected by the disinfection team(s). The lagoon will be covered, if possible and allowed to go anaerobic. The pH of the liquid will be monitored to ensure it remains at or below pH 6.0 for a minimum time determined by the Board of Animal Health and/or Minnesota Department of Agriculture. The FMD virus is destroyed at a low pH. The introduction, mixing and monitoring of this operation needs further planning and

development. Afterward the manure will be land applied to any adjacent farm fields and incorporated. Liquid manure lagoons will be acidified to kill the virus.

### **Milk and Dairy Products**

The disposal of milk products will be difficult because large volumes are often involved. It is essential that milk should be treated following Board of Animal Health and Agriculture Department procedures to inactivate any virus before disposal. Following inactivation, disposal options need to be considered. Usually milk held on farm is in small quantities and can be disinfected and disposed of in the manure pit.

Where effluent is normally irrigated over pastures these should not be grazed for two weeks (or such period as described in the relevant Disease Strategy) after irrigation. Rennet, casein, whey or other wastes must not be sprayed over pastures, discharged into drains, or fed to animals, unless treated with disinfectant, as for milk.

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This State of Minnesota Guidance borrows heavily from the AUSTRALIAN VETERINARY EMERGENCY PLAN aka AUSVETPLAN, 1996, Operational Procedures Manual, Disposal chapter. AUSVETPLAN is a series of technical response plans that describe the proposed Australian approach to an exotic animal disease incursion. The documents provide guidance based on sound analysis, linking policy, strategies, implementation, coordination and emergency-management plans. The Agriculture and Resource Management Council of Australia and New Zealand produces the AUSVETPLAN, available on line at: <http://www.aahc.com.au/ausvetplan/index.html>

Other sources of information and guidance include

“Emergency Carcass Disposal Recommendations”, MPCA draft document, Brynildson, and Jakes, review and comment by Anderson (DNR) and Friendshuh (BAH)

“Part H- Disposal”, pages 87-90, apparently a portion of a Department of Agriculture document unknown title document, pages 99-105, disposal and disinfection procedures

## Attachment 1: Generic Safety Plan

### FMD CARCASS DISPOSAL & DISINFECTION HAZARD EVALUATION FORM

#### GENERAL INFORMATION

Site:	Job Site:
Work Tasks:	
Date:	
Prepared By:	Reviewed By:
Site Contact:	Client Telephone #:
Site Contact:	Site Telephone #:

#### CHEMICAL AND DISINFECTANT INFORMATION

Hazardous Substances and Disinfecting Agents	Quantity	Primary Hazard	TLV/PEL	IDLH	Routes of Exposure
Oxy-Sept 333		Corrosive pH<1			Contact
Oxine					
Sodium hypochlorite					
Acetic Acid					

**Potential Health Effects: Please review the attached MSDS sheets**

#### **Potential Physical Hazards:**

Excavation and Trenching of Burn Pits: Excavations greater than four feet in depth are considered a confined space and entry requires conformance to the facility's confined space entry procedure. Excavations greater than five feet in depth shall not be entered until protective measures such as sloping (1½ feet horizontal for each 1 foot vertical), benching, or the installation of sidewall support systems are implemented. These protective measures must meet the specifications, and be implemented by a "competent person," as defined in 29 CFR 1926.650. An excavation less than five feet in depth may only be entered after the ground is examined by a "competent person," and that person does not find a potential for cave-in. A ladder must be provided for egress from trenches at intervals of 25 feet. Personnel shall keep a safe distance (at least three feet back) from the edge of all excavations to avoid accidental entry.

Manual material handling: General manual material handling hazards include hand and feet injuries, sprains and strains, slips, trips, and falls. Hazard controls include preplanning work activities, and utilizing mechanical equipment to assist manual material handling.

Slips, trips, falls: Working at elevated locations is not anticipated for this project; however, tripping hazards and slippery surfaces will be encountered. Such hazards can be controlled by wearing sturdy, steel-toed work boots at the site, tripping hazards should be identified and removed or marked at all times.

Electrical hazards: Electrical shock hazards from working with portable tools and extension cords and working during periods of lightning. Electrical hazards can be controlled through inspection of tools and cords prior to use, use of ground fault circuit interrupters (GFCI) on all circuits used for portable electric

tools, using qualified electrical workers for installing electrical systems, properly grounding equipment, and not working during periods of lightning hazards.

Gasoline and fuel-oil handling: Liquid fuels may provide fire and explosion hazards and the potential for contact with hazardous materials. Hazard controls include limiting the quantity of fuel stored at the site, proper storage of fuel in approved tanks and containers, bonding and grounding storage tanks during fuel transfer, enforcing no smoking regulations, and eliminating ignition sources where fuel is stored or used.

Biological Hazards: Warm-blooded animals, such as dogs, cats, and rats, can transmit rabies, tetanus, and other diseases. Rabies can be transmitted when the saliva from an infected animal contacts an open wound or normal body opening such as the mouth or eye. All animals are assumed to be potentially dangerous. Poisonous plant such as Poison Ivy and Poison Oak shall be identified and avoided.

Cold Stress: Cold stress can be a severe hazard at any time but especially during the fall and winter months and when working on or near water. Extreme cold exposure for a short period of time may cause severe injury to the surface of the body or result in profound generalized cooling which may result in death. Areas of the body having a high surface area-to-volume ratio such as fingers, toes, and ears are the most susceptible. Factors which influence the development of cold weather injuries include work load, ambient temperature, wind speed, and moisture/wetness.

Hypothermia: The symptoms are shivering, apathy, listlessness, sleepiness, unconsciousness, glassy state, slow pulse, slow respiration. Unless treated, hypothermia can result in freezing of the extremities and death.

Treatment: MEDICAL EMERGENCY! To treat someone with hypothermia, warm the victim and seek immediate medical attention.

Frostbite: Frostbite can be classified into three groups: frost nip; superficial frostbite; and deep frostbite. Symptoms of frostbite are blanching or whitening of skin, waxy skin appearance, and cold, pale, solid skin.

Treatment: Remove the victim from the cold environment and provide gradual, constant warming to the affected region. Do not vigorously rub frozen areas of skin as this may cause permanent damage. Severe cases should seek medical attention.

Preventive Measures: The risk of cold stress can be minimized through the use of proper clothing and adequate shelter/rest facilities. Layers of clothing should be utilized and the type of clothing should act to keep moisture away from the body. Rest areas should provide protection from cold environments and should be heated. Warm fluids should be provided.

Heat Stress: Heat stress is a primary hazard at hazardous waste sites during hot, humid periods of the year and when work involves the use of impermeable protective suits and respirators. Symptoms of heat stress can be diagnosed as being either heat cramps, heat exhaustion, or heat stroke and are defined/identified below.

Heat Stroke: The symptoms are red, hot, dry skin, and the person has ceased to perspire. Nausea, dizziness, confusion, high body temperature, rapid respiratory and pulse rates, unconsciousness or coma are also indicators of heat stroke. Heat stroke is the most severe and dangerous form of heat stress, and can be life-threatening.

**Treatment:** Medical Emergency! To treat someone with heat stroke, cool the victim quickly by soaking in the person in cool water, or run cool water over the person (especially the head and torso) in order to reduce the body temperature. Remove victim to a shaded or cool area away from the hot environment. If body temperature is not reduced, the person runs the risk of permanent brain damage or death. If the person is conscious, give small amounts of water. Someone should stay and observe the victim while another person obtains medical help.

**Heat Exhaustion:** The symptoms are pale, clammy, moist skin with profuse perspiration and weakness. A headache and nausea may also be present.

**Treatment:** To treat a person with heat exhaustion, move them to a cool, air-conditioned place. Have the person sit or lie down and immediately drink 1-2 glasses of water. Seek immediate medical attention.

**Heat Cramps:** The symptoms are similar to heat exhaustion with the addition of abdominal spasms/cramps of voluntary muscles such as the abdomen and extremities.

**Treatment:** To treat a person with heat cramps, move them to a cool, air-conditioned place. Have the person sit or lie down and immediately drink 1-2 glasses of water. Seek medical attention.

**Prevention of Heat Stress:** The onset and effects of heat stress and the associated symptoms can be reduced through a combination of acclimation, proper work/rest regimen, and the provision of shaded rest areas and cool fluids. All workers shall be provided with adequate periods of rest when needed. The Site Supervisor or SSHO is responsible for ensuring employees receive adequate periods of rest and for establishing appropriate work/rest regimens.

**Confined-space entry:** Confined spaces at the project site are not anticipated. If confined spaces are encountered, the hazards associated with this activity will be controlled through the proper execution of confined-space entry procedures, monitoring, PPE, and pre-planning.

**Illumination:** The majority of work shall be performed during daylight working hours. For work performed in low light conditions, two light towers equipped with a 3 KW generator (minimum) will be utilized at the material placement site. Each light tower will have metal halide bulbs (1000 watt) or equivalent. No work will be permitted after dusk without the aid of both light towers.

**Heavy Equipment:** Work in or around heavy equipment presents several hazards including the potential for being caught in or crushed by moving equipment, being struck by falling materials, and exposure to noise (addressed separately). The risk of these injuries can be reduced by staying clear of heavy equipment being operated, being observant of work activities, wearing appropriate PPE including hard hats and safety boots, and making the equipment operator aware of your presence - approach operating equipment in a direction which is visible to the operator. **All ground crew employees shall wear high visibility vests when working around heavy equipment.**

**Overhead Utilities and/or Piping:** The work area may contain overhead utilities and/or piping which could contact heavy equipment during transportation or operation. For overhead electrical utilities, equipment shall not be allowed to be closer than four feet during transportation and shall be kept at least 10 feet during operation. Additional clearance may be necessary if line voltage is greater than 50 kV. If adequate clearance cannot be obtained, the lines must be insulated or de-energized before work can be performed.

*Noise:* Exposure to continuous loud noise or short-duration, impact type noise can lead to temporary or permanent hearing loss. Effects of noise can be minimized by staying away from noise sources and wearing proper hearing protection including ear inserts and muffs. **All work near heavy equipment operation requires the use of hearing protection.**

**Exposure Circumstances (check all that apply):**

- |                                    |                                    |                                       |   |
|------------------------------------|------------------------------------|---------------------------------------|---|
| <input type="checkbox"/> unknown   | <input type="checkbox"/> toxic     | <input type="checkbox"/> oxidizer     | <input type="checkbox"/> inside         |
| <input type="checkbox"/> flammable | <input type="checkbox"/> reactive  | <input type="checkbox"/> outside      | <input type="checkbox"/> confined space |
| <input type="checkbox"/> corrosive | <input type="checkbox"/> pesticide | <input type="checkbox"/> traffic area | <input type="checkbox"/> on/near water  |
| <input type="checkbox"/> other:    |                                    |                                       |   |

**MONITORING EQUIPMENT**

Monitoring Equipment	PPE Upgrade Action Levels	Upgrade to	Monitoring Frequency
Combustible gas indicator			
Oxygen indicator			
pH paper			
Olfactory			

**PRIMARY RESPONSE TEAM MEMBERS/ROLES**

Position/Title	Name	Phone #	Role
MPCA Contact			
MDA Contact			
FADD Contact			
FOC Contact			
Contractor Site Sup.			

**ADDITIONAL FORMS YOU MAY NEED**

- |   |   |
|---|---|
| <input type="checkbox"/> Confined-Space Entry Permit                | <input type="checkbox"/> None                   |
| <input type="checkbox"/> Underground Utility Locate (Attached Form) | <input type="checkbox"/> Applicable MSDS Sheets |
| <input type="checkbox"/> Hospital Route Map                         | <input type="checkbox"/> Daily Log and          |
| Inventory Control Form  |   |
| <input type="checkbox"/> Daily Task and Safety Briefing Form        | <input type="checkbox"/> Other:                 |

**PERSONAL PROTECTIVE EQUIPMENT**

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> Hard hat       | <input type="checkbox"/> BW coveralls  | <input type="checkbox"/> Firefighter turnout gear (# )      |
| <input type="checkbox"/> Faceshield     | <input type="checkbox"/> Plain Tyvek   | <input type="checkbox"/> Steel-toed work boot               |
| <input type="checkbox"/> Safety glasses | <input type="checkbox"/> Poly Tyvek    | <input type="checkbox"/> Steel-toed chemical-resistant boot |
| <input type="checkbox"/> Splash goggles | <input type="checkbox"/> Saranex Tyvek | <input type="checkbox"/> Boot Covers (latex)                |
| <input type="checkbox"/> Ear plugs      | <input type="checkbox"/> Barricade     |   |
| <input type="checkbox"/> Work Gloves    | <input type="checkbox"/>               |   |
| <input type="checkbox"/> Rainwear       | <input type="checkbox"/>               |   |

Gloves:

<u>Inner</u>	<u>Outer</u>	<u>Type</u>
<input type="checkbox"/>	<input type="checkbox"/>	Latex
<input type="checkbox"/>	<input type="checkbox"/>	Nitrile
<input type="checkbox"/>	<input type="checkbox"/>	Neoprene
<input type="checkbox"/>	<input type="checkbox"/>	NAT rubber
<input type="checkbox"/>	<input type="checkbox"/>	Silvershield/4H
<input type="checkbox"/>	<input type="checkbox"/>	Other ( )

Respiratory Protection:

- SCBA (# units:            # spare tanks:            )
- Supplied air (# units:            line length:            # cylinders:            )
- FF APR (cartr: OVAG as needed)
- FF APR (cartr: P-100)
- FF APR (cartr: OVAG/P-100 Combo)
- PAPR
- Half-APR (cartr:            )
- Disposable

**DECON/SITE CONTROL**

- |   |   |
|---|---|
| <input type="checkbox"/> Establish hot zone   | <input type="checkbox"/> Deploy decon equipment |
| <input type="checkbox"/> Establish decon area | <input type="checkbox"/> Control site access    |

**EQUIPMENT CHECKLIST**

- |  |   |
|--|---|
| <input type="checkbox"/> Water (or source at site)                                   | <input type="checkbox"/> First aid kit  |
| <input type="checkbox"/> Brushes/tubs  | <input type="checkbox"/> Eyewash (type:            )                          |
| <input type="checkbox"/> Soap and hand towels  | <input type="checkbox"/> Fire extinguish (type:            size:            ) |
| <input type="checkbox"/> Plastic sheeting  | <input type="checkbox"/> Sorbents (type:            )                         |
| <input type="checkbox"/> Containers: <input type="checkbox"/> drums (#:            ) | <input type="checkbox"/> Booms (type:            )                            |
| <input type="checkbox"/> bags (#:            )                                       | <input type="checkbox"/> Field telephone                                      |
| <input type="checkbox"/> GFCI device   | <input type="checkbox"/> Neutralizer (type: soda ash amount:            )     |
| <input type="checkbox"/> Drinking water and cups                                     | <input type="checkbox"/> Pump (type:            )                             |
| <input type="checkbox"/> Generator   | <input type="checkbox"/> Ventilator (type:            ducting:            )   |
| <input type="checkbox"/> Extension cord (amount:            )                        | <input type="checkbox"/> Lighting (type:            )                         |
| <input type="checkbox"/> Tools (types:            )                                  | <input type="checkbox"/> Disinfectant (type:            )                     |
| <input type="checkbox"/> Other:  |   |
| <input type="checkbox"/> Other:  |   |

**CONTINGENCY INFORMATION : Review Hospital Route Map**

Hospital location:		Telephone #:
*Police #:	Fire #:	Emergency Medical Service #:
(*if other than 911)		

**EMERGENCY FIRST AID PROCEDURES****Decontamination**

Avoid contamination while performing tasks to minimize health risk and decontamination. Thoroughly decontaminate or discard all equipment and PPE. Do not reuse contaminated PPE. Use warm water and soap for decontamination purposes.

**Decontamination Procedure:**

1. Designate a specific decontamination area at a safe location outside of the exclusion zone or contaminated area at the project site. If outdoors, select an area upwind of the project site.
2. Assemble the required equipment and materials as stated below. Organize the decontamination area to limit the spread of contamination outside of the exclusion zone.
3. When exiting the exclusion zone, perform personal decontamination in the following order:
  - a) Wipe or remove gross contamination with disposable rags or sorbent pads
  - b) Remove and discard tape
  - c) Wash or thoroughly wipe and clean boots
  - d) Wash, rinse and remove and discard boot covers and outer gloves
  - e) Carefully remove outer protective suit and discard
  - f) Remove respiratory protection equipment
  - g) Remove inner gloves
  - h) Wash hands, face, and exposed skin or shower
4. Contain all disposable contaminated materials for disposal.
5. Contain all non-disposable contaminated equipment (e.g., respiratory protective equipment) for further decontamination and re-use.

**Equipment and Materials**

The following equipment and materials shall be used for decontamination and contaminated equipment disposal purposes:

- Contractor garbage bags for disposable PPE
- Plastic sheeting

## **Disposition of Contaminated Materials and Waste**

All contaminated and generated waste will be containerized, labeled and kept on-site and disposed of through the proper wastestream.

## **Emergency Decontamination**

In the event of a medical emergency in the exclusion zone or a contaminated work area, immediately exit the area and provide emergency decontamination to the injured person(s) using the following procedure:

1. BLOT or wipe visible contamination from the person
2. STRIP contaminated clothing from the person
3. FLUSH impacted skin and/or eyes with copious quantities of water
4. COVER the employee
5. TRANSPORT the employee to the designated medical provider

## **Health and Safety Field Notes:**

## GOPHER STATE ONE CALL FAX-A-LOCATE AGREEMENT

In order to utilize the Gopher State One Call Fax-A-Locate program, excavators must complete and sign this agreement.

Company name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone Number \_\_\_\_\_ Fax number \_\_\_\_\_

Name and phone number of person(s) coordinating program for your company:

<u>Name</u>	<u>Phone number (if different)</u>
_____	_____
_____	_____

Once the locate request has been processed, it will be returned to you with the ticket number, legal start date and time, and a list of notified operators.

**IT IS YOUR RESPONSIBILITY TO READ AND VERIFY THE ACCURACY OF EACH LOCATE REQUEST.**

Contact the Gopher State One Call office immediately if there are any changes.

I acknowledge receipt of the Gopher State One Call Fax-A-Locate Policies and Procedures and agree to comply with those conditions along with those contained in the Professional Excavators Manual.

Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_  
-----

--  
For use by Gopher State One Call only  
Approved \_\_\_\_\_ Date \_\_\_\_\_

Gopher State One Call  
2020 Centre Pointe Boulevard, Mendota Heights, MN 55120

Phone: 651-454-8388 or 800-422-1242 Fax: 651-454-0170

### FAX-A-LOCATE REQUEST FORM

Caller Id Number \_\_\_\_\_ Fax phone number \_\_\_\_\_

Company name \_\_\_\_\_

Caller name \_\_\_\_\_ Phone number \_\_\_\_\_

Explosives ( Y / N ) \_\_\_\_\_ R.O.W. ( Y / N ) \_\_\_\_\_ Duration of job \_\_\_\_\_

Type of work \_\_\_\_\_

Work being done for \_\_\_\_\_

County \_\_\_\_\_ City/Place \_\_\_\_\_

Address \_\_\_\_\_ Street \_\_\_\_\_

Nearest cross street  
\_\_\_\_\_

Location of work \_\_\_\_\_

Remarks \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_ Section/Quarter \_\_\_\_\_

Township \_\_\_\_\_ Range \_\_\_\_\_ Section/Quarter \_\_\_\_\_

**OR**

Hudson Year \_\_\_\_\_ Page \_\_\_\_\_ Grid \_\_\_\_\_

-----  
--

For Gopher State One Call use only

Ticket number \_\_\_\_\_ Work to begin date/time \_\_\_\_\_

Utilities notified \_\_\_\_\_

**IF THERE ARE ANY OTHER UNDERGROUND FACILITY OPERATORS IN YOUR AREA OF EXCAVATION OTHER THAN THE ONE LISTED ABOVE YOU SHOULD NOTIFY THEM DIRECTLY OF YOUR INTENTION TO DIG.**

## MULTIPLE FAX-A-LOCATE REQUEST FORM

Caller Id Number \_\_\_\_\_ Fax phone number \_\_\_\_\_

Company name \_\_\_\_\_

Caller name \_\_\_\_\_ Phone number \_\_\_\_\_

Explosives ( Y / N ) \_\_\_\_ R.O.W. (Y / N) \_\_\_\_ Duration of job \_\_\_\_\_

Type of work \_\_\_\_\_

Work being done for \_\_\_\_\_

County \_\_\_\_\_ City/Place \_\_\_\_\_

Location of work \_\_\_\_\_

Remarks \_\_\_\_\_

Address/Street	Cross Street	Legal Description	Ticket Number

**IF THERE ARE ANY OTHER UNDERGROUND FACILITY OPERATORS IN YOUR EXCAVATION AREA OTHER THAN THE ONE LISTED, YOU SHOULD NOTIFY THEM INDIVIDUALLY.**




**Daily Log and Inventory Control Form**

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

**Date:** \_\_\_\_\_

**Labor Tracking:**

<b>Name</b>	<b>Company</b>	<b>Task</b>	<b>Hours</b>

**Equipment Tracking:**

<b>Tools/Item</b>	<b>Quant.</b>	<b>Tools/Item</b>	<b>Quant.</b>	<b>Tools/Item</b>	<b>Quant.</b>
Pressure Washer		Portable Pumps			
Portable Lighting		Scrub Brushes			
Sprayers		Hard Hat			
Shovels		Ear Protection			
Brooms		Generator			
Gloves		Buckets			
Boots					

**Consumables:**

<b>Item/PPE</b>	<b>Quant.</b>	<b>Item/PPE</b>	<b>Quant</b>	<b>Item/PPE</b>	<b>Quant.</b>
Tyvek suit		RR Ties			
Saranex Suit		Coal			
Neoprene Gloves		Disinfectant			

Leather Gloves		Straw			
		Fuel			

**Sub-Contractor/Equipment**

<b>Equipment/Items</b>	<b>Hour s</b>	<b>Equipment/Items</b>	<b>Hour s</b>	<b>Equipment/Items</b>	<b>Hour s</b>
Trackhoe					
Skid loader					
Grapple truck					
Dump Truck					
Backhoe					

<b>Daily Task and Safety Briefing Form</b>		
<b>Date:</b>	<b>Time:</b>	<b>Farm/Location</b>
<b>Planned/Proposed Activities:</b>		
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
<b>Safety questions/issues raised:</b>		<b>Actions/Follow-up needed:</b>
1.		
2.		
3.		

<b>4.</b>	
<b>5.</b>	
<b>6.</b>	
<b>Activities/Tasks completed</b>	

**Safety Briefing Attendees**

<b>Printed Name</b>	<b>Signature</b>	<b>Company</b>
<b>1.</b>		
<b>2.</b>		
<b>3.</b>		
<b>4.</b>		
<b>5.</b>		
<b>6.</b>		
<b>7.</b>		
<b>8.</b>		
<b>9.</b>		
<b>10.</b>		
<b>11.</b>		
<b>12.</b>		
<b>13.</b>		
<b>14.</b>		
<b>15.</b>		

**Site Visitors**

<b>Printed Name</b>	<b>Signature</b>	<b>Representing</b>
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		

## APPENDIX I MSDS SHEETS

<b>International Chemical Safety Cards</b>			
<b>ACETIC ACID</b>			<b>ICSC: 0363</b>
ACETIC ACID Glacial acetic acid Ethanoic acid Ethylic acid Methanecarboxylic acid $C_2H_4O_2 / CH_3COOH$ Molecular mass: 60.1 CAS # 64-19-7 RTECS # AF1225000 ICSC # 0363 UN # 2789 (>80%) EC # 607-002-00-6			
<b>TYPES OF HAZARD/ EXPOSURE</b>	<b>ACUTE HAZARDS/ SYMPTOMS</b>	<b>PREVENTION</b>	<b>FIRST AID/ FIRE FIGHTING</b>
<b>FIRE</b>	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, alcohol-resistant foam, water spray, carbon dioxide,
<b>EXPLOSION</b>	Above 39°C explosive vapour/air mixtures may be formed.	Above 39°C use a closed system, ventilation, and explosion-proof electrical equipment.	In case of fire: keep drums, etc., cool by spraying with water.
<b>EXPOSURE</b>		<b>AVOID ALL CONTACT!</b>	
<b>INHALATION</b>	Sore throat. Cough. Burning sensation. Headache. Dizziness. Shortness of breath. Laboured breathing. Symptoms may be delayed (see Notes).	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Half-upright position. Refer for medical attention.

<b>SKIN</b>	Pain. Redness. Blisters. Skin burns.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Rinse skin with plenty of water or shower. Refer for medical attention.	
	<b>EYES</b>	Redness. Pain. Severe deep burns. Loss of vision.	Face shield, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
		<b>INGESTION</b>	Abdominal pain. Burning sensation. Diarrhoea. Shock or collapse. Sore throat. Vomiting.	Do not eat, drink, or smoke during work.
<b>SPILLAGE DISPOSAL</b>	<b>STORAGE</b>		<b>PACKAGING &amp; LABELLING</b>	
Collect leaking liquid in sealable containers. Cautiously neutralize spilled liquid with sodium carbonate only under the responsibility of an expert. Wash away remainder with plenty of water (extra personal protection: chemical protection suit including self-contained breathing apparatus).	Fireproof. Separated from food and feedstuffs. See Chemical Dangers. Keep in a well-ventilated room.	Do not transport with food and feedstuffs. C symbol R: 10-35 S: (1/2-)23-26-45 Note: B UN Hazard Class: 8 UN Subsidiary Risks: 3 UN Packing Group: II		

# International Chemical Safety Cards

## ACETIC ACID

ICSC: 0363

I M P O R T A N T D A T A	<p><b>PHYSICAL STATE;</b> <b>APPEARANCE:</b> COLOURLESS LIQUID , WITH PUNGENT ODOUR.</p>	<p><b>ROUTES OF EXPOSURE:</b> The substance can be absorbed into the body by inhalation of its vapour and by ingestion.</p>
	<p><b>PHYSICAL DANGERS:</b></p>	<p><b>INHALATION RISK:</b> A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.</p>
	<p><b>CHEMICAL DANGERS:</b> The substance is a weak acid. Reacts violently with oxidants and bases. Attacks many metals forming flammable/explosive gas (hydrogen -- see ICSC # 0001). Attacks some form of plastics, rubber and coatings.</p>	<p><b>EFFECTS OF SHORT-TERM EXPOSURE:</b> The substance and the vapour is corrosive to the eyes, the skin and the respiratory tract. Corrosive on ingestion. Inhalation of the vapor may cause lung oedema (see Notes). The effects may be delayed. Medical observation is indicated.</p>
	<p><b>OCCUPATIONAL EXPOSURE LIMITS (OELs):</b> TLV (as TWA): 10 ppm; 25 mg/m<sup>3</sup> , as STEL: 15 ppm; 37 mg/m<sup>3</sup> (ACGIH 1997). OSHA PEL: TWA 10 ppm (25 mg/m<sup>3</sup>) NIOSH REL: TWA 10 ppm (25 mg/m<sup>3</sup>) ST 15 ppm (37 mg/m<sup>3</sup>) NIOSH IDLH: 50 ppm</p>	<p><b>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:</b> Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the gastrointestinal tract , resulting in digestive disorders including pyrosis and constipation. Relative density of the vapour/air- mixture at 20°C (air = 1): 1.02 Flash point: 39°C c.c. Auto-ignition temperature: 427°C Explosive limits, vol% in air: 5.4- 16 Octanol/water partition coefficient as log Pow: -0.31</p>
	<p>Boiling point: 118°C Melting point: 16.7°C Relative density (water = 1): 1.05 Solubility in water: miscible Vapour pressure, kPa at 20°C: 1.5 Relative vapour density (air = 1): 16 2.1</p>	
	<p><b>PHYSICAL PROPERTIES</b></p>	

# International Chemical Safety Cards

## SODIUM HYPOCHLORITE (SOLUTION, ACTIVE CHLORINE 5%)

ICSC: 0482

SODIUM HYPOCHLORITE (SOLUTION, ACTIVE CHLORINE 5%)

Sodium oxychloride  
Sodium chloride oxide  
NaClO  
Molecular mass: 74.44  
CAS # 7681-52-9  
RTECS # NH3486300  
ICSC # 0482  
EC # 017-011-00-1

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
<b>FIRE</b>	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		Powder, water spray, foam, carbon dioxide.
<b>EXPLOSION</b>			
<b>EXPOSURE</b>		PREVENT GENERATION OF MISTS!	
<b>INHALATION</b>	Cough. Sore throat.	Ventilation.	Fresh air, rest. Refer for medical attention.
<b>SKIN</b>	Redness. Pain.	Protective gloves.	First rinse with plenty of water, then remove contaminated clothes and rinse again.
<b>EYES</b>	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

**INGESTION**

Abdominal pain. Burning sensation. Cough. Diarrhoea. Sore throat. Vomiting.

Do not eat, drink, or smoke during work.

Rinse mouth. Give plenty of water to drink. Refer for medical attention.

**SPILLAGE DISPOSAL**

Ventilation. Wash away spilled liquid with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents. In case of a large spillage use (extra personal protection: self-contained breathing apparatus).

**STORAGE**

Separated from acids. See Chemical Dangers. Cool. Keep in the dark. Well closed.

**PACKAGING & LABELLING**

Xi symbol  
R: 31-36/38  
S: (1/2-)28-45-50  
Note: B

# International Chemical Safety Cards

## SODIUM HYPOCHLORITE (SOLUTION, ACTIVE CHLORINE 5%)

ICSC: 0482

I M P O R T A N T  D A T A	<p><b>PHYSICAL STATE;</b> <b>APPEARANCE:</b> CLEAR, SLIGHTLY YELLOW SOLUTION , WITH CHARACTERISTIC ODOUR.</p> <p><b>PHYSICAL DANGERS:</b></p> <p><b>CHEMICAL DANGERS:</b> The substance decomposes on heating, on contact with acids and under influence of light producing toxic and corrosive gases including chlorine (see ICSC # 0126). The substance is a strong oxidant and reacts with combustible and reducing materials. The solution in water is a weak base.</p> <p><b>OCCUPATIONAL EXPOSURE LIMITS (OELs):</b> TLV not established.</p>	<p><b>ROUTES OF EXPOSURE:</b> The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.</p> <p><b>INHALATION RISK:</b> No indication can be given about the rate in which a harmful concentration in the air is reached on evaporation of this substance at 20°C.</p> <p><b>EFFECTS OF SHORT-TERM EXPOSURE:</b> The substance irritates the eyes, the skin and the respiratory tract.</p> <p><b>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:</b> Repeated or prolonged contact may cause skin sensitization.</p>
	<p><b>PHYSICAL PROPERTIES</b></p> <p>Relative density (water = 1): 1.1 (5.5% aqueous solution)</p>	
	<p><b>ENVIRONMENTAL DATA</b></p> <p>The substance is toxic to aquatic organisms.</p>	

### NOTES

Household bleaches usually contain about 5% sodium hypochlorite (about pH11, irritant), and more concentrated bleaches contain 10-15% sodium hypochlorite (about pH13, corrosive). Rinse contaminated clothes (fire hazard) with plenty of water. Clorox and Javel water are trade names. Also consult ICSC # 1119 (Sodium hypochlorite, active chlorine >5%).

## Attachment 2: MPCA/MDA Staging Area Criteria

**Function:** To stockpile needed equipment to implement the disposal and cleaning & disinfecting (C & D) functions. In addition, staff and contractors doing disposal or C & D will report to this location and be dispatched to specific farms. A Staging Area Coordinator(s) will track resources coming in, being dispatched and needed. In addition, they will work on procuring additional resources needed from local, county, state and private sources.

### Need:

- Light
- Electricity
- Water
- Shelter (or room to bring trailers)
- Toilet Facilities (or room to bring in)
- R & R Facility (or room to bring trailers)
- Room to park lots of trucks and trailers
- Phone/FAX
- TV
- Copier
- Security
- Accessible
- Pavement
- Office Space (or room to bring mobile unit)

### Don't Want:

- High traffic area
- High visibility area
- Residential area
- Unpaved area, in case of rain

### Other issues to consider:

- Proximity to infected zone or each affected farm
- Proximity to local EOC
- Who the land owner is
- Other

---

## Attachment 3: MPCA Burial Checklist

<b>Parameter</b>	<b>Consideration of Parameter</b>
<b>Labor</b>	Disposal Foreman Site Inspector Burial Team: foreman, 1-2 operators, 2-3 laborers, excavator, front end loader Disinfection Team- foreman, operator, 1-2 laborers, disinfection equipment, see note 1
<b>Location</b>	
<i>Assess depth to groundwater</i>	Need minimum 9 feet to groundwater: 3-5 feet groundwater to animals (looser soil more separation) 3 feet animal burial layer 3 feet cover over animals (If needed, mound and/or pile boulders for cover)
	High flat area
	Review maps or other data, confer with landowner and/or locals
	Dig test pits, if needed
<i>Accessibility</i>	Accessible to heavy equipment
<i>Setbacks</i>	Maximum separation distance from wells, surface water, and field tiles
	Sufficient distance from structures/residential area
	Sufficient distance from underground utilities, consider access route
	Sufficient distance from aboveground utilities, consider access route
<b>Site Preparation</b>	
<i>Calculate trench length</i>	Total length of burial pit needed: Cows: 6 ft animal layer = 100 feet/100 animals 3 ft animal layer = 200 feet/100 animals Pigs: 6 ft animal layer = 20 feet/100 animals 3 ft animal layer = 40 feet/100 animals Sheep: 6 ft animal layer = 20 feet/100 animals 3 ft animal layer = 40 feet/100 animals
<i>Confirm groundwater</i>	Dig test pits at ends to confirm soil and groundwater conditions
	Stake out line
<b>Pit Construction</b>	
	Remove topsoil and place on non-loading side of pit
	Trench dimensions: 9 feet wide x calculated length x calculated depth
<b>Carcass Placement</b>	
	Slit carcasses before placing in pit to prevent gas expansion, slit tendons

	Animal layer should be 3 feet or 6 feet, based on groundwater depth and calculations
<b>Pit Closure</b>	
	Cover carcasses with 1-2 feet of soil. If possible, add a layer of lime, then more soil. Mound soil for settling.

## Notes:

1. Disinfection teams and equipment are being planned for by MN Department of Agriculture. Generally, the equipment will consist of a large amount of water, large quantities of disinfectant, brushes, buckets, sprayers, personnel showers and all need linens.

### Attachment 4: MPCA Cremation Checklist

Parameter	Consideration of Parameter
<b>Labor</b>	Disposal Foreman Site Inspector Construction Team: foreman, 1-2 operators, 2-3 laborers Front end loader or backhoe, logging trailer with grapppler boom Logging skidder or bobcat for moving dirt Disinfection Team- foreman, operator, 1-2 laborers, disinfection equipment* Fuel Team- 2 trucks/trailers with drivers hauling railroad ties, 2 dump trucks with drivers hauling coal, local fuel oil delivery truck with driver
<b>Location</b>	High flat area
	Readily accessible to heavy equipment
	Construction site perpendicular to prevailing wind direction
	Sufficient distance from underground utilities—consider vehicle access route as well
	Sufficient distance from aboveground utilities, consider vehicle access route, Gopher One Call
	Sufficient distance from downwind residences, or downwind evacuation of sensitive populations
	Sufficient distance from structures/residential area/hay, straw for fire protection
	Sufficient room upwind to conduct operations during burning
	Sufficient room downwind to bury ash when operation completed
<b>Site Preparation</b>	Calculate total length needed (approx. 1 yd/cattle carcass; 1 yd per 5 swine carcass)
	Stake out line; remove combustible material for firebreak
	Scrape roughly flat, scrape shallow 1 ft deep x 7 ft wide trench
<b>Fuel Requirements</b>	
<i>Wood</i>	Creosote ties, dried timbers or logs (8-ft. lengths) 2 per Cattle carcass, see note 1
<i>Straw or Hay</i>	3 square bales per Cattle carcass or use big rolled bales. One rolled bale equals 10-15 square bales, see note 2
<i>Pallets or kindling</i>	50 lbs/Cattle carcass, see note 3
<i>Fuel oil or diesel</i>	1 gal per Cattle carcass, DO NOT USE GASOLINE
<i>Coal</i>	About 1,000 lbs/carcass, see note 4.

**Notes:**

1. Dried RR ties preferred. A flatbed trailer contains about 260 good quality ties. Older poorer quality ties weigh less so more on a load. A 40 foot long flatbed logging trailer contains about 150 logs. 100 cattle require about 40 cords of wood. That is equal to about 4 truck loads of 8ft dry timbers or logs. 1000 cattle require about 40 truckloads (400 cords) of dry wood. Do not use pentachlorophenol (PCP) or chrominated copper arsenate (CCA) treated "green-wood." Use only creosote treated lumber.
2. Used as fuel supply, igniter. Seek out any herbaceous crop residue: hulls/husks/cobs. If there is stock feed on the farm that may have been contaminated, include its use in the pyre.
3. Pallets are good for providing platform on top of ties to pile coal on. Sawmills have bundled "slab wastes" for kindling.
4. Coal piled on pallets, several feet deep, with some coal piled on top of carcasses.
5. A worksheet follows to calculate quantities needed of alternative fuels.

**Pyre Construction**

It may be difficult to obtain sufficient quantities of the materials described. The individual in charge of building the fire must use ingenuity in acquiring materials and putting them to optimum use. Until carcasses are totally destroyed, the fire should be guarded to avoid dissemination of infected material by predatory animal or birds.

This instruction assumes 8' railroad ties or logs from sawmills or paper mills have been delivered for pyre construction. If other dimensioned wood is being used, adjust accordingly. The logs are expected to weigh about 300 lbs each, so mechanical equipment is necessary to aid in construction. A logging trailer with a grappling boom may be an efficient way to quickly place timber and carcasses roughly in place.

**Method A "One Layer"**

1. A shallow trench is cut, 1 foot deep by 7 feet wide.
2. A big roll bale of straw is unrolled in the trench.
3. Railroad ties are placed alongside on the top edge of the trench.
4. 8 foot long railroad ties placed perpendicular across trench approximately every 3 feet.
5. Wood pallets are piled on the ties.
6. Straw
7. Coal is poured in a layer 2-3 feet thick onto pallets.
8. Carcasses
9. More coal
10. Fuel oil.

**Method B "Three Layer"**

1. Largest diameter railroad ties are laid parallel to the prevailing winds, 6-12 inches apart apart.
2. Place ties or timbers perpendicular to first layer, with three or four across four logs in the first layer.
3. Stuff spaces between logs with straw and coal.
4. Spread kindling across this layer.
5. Place third layer of ties or timbers in the direction as the first layer.
6. Stuff spaces with straw.
7. Spread loose straw over logs,
8. Pile coal over straw at a rate of 600 lbs per 8' section.
9. Place carcasses on top. Position them on their backs with feet in the air alternately, head to tail. Place loose straw over and in between the carcasses.
  
10. Pour or spray fuel oil over the pyre from fuel truck or with drums.
11. Using a torch that will burn for several minutes, start the fire along the entire length of the pyre.

### **Fire Operations:**

The fire will have to be tended and rearranged periodically as it progresses. Additional fuel may be needed. Add contaminated straw, bedding, contaminated feed into the fire.

### **Site Cleanup Requirements:**

When all carcasses have completely burned, begin site cleanup by putting all combustible material at the site into the pyre, including used personal protective clothing. If burning wasn't done in shallow trench, prepare a trench or pit downwind of the pyre, and move ashes into pit. Cover ashes with sufficient soil layer. Do not remove equipment from site without being cleaned and disinfected.