

INFOSHEET #9

DISPOSAL OF LIVESTOCK MORTALITIES

How to address concerns identified in Environmental Farm Plan Worksheet #9



Based on
Environmental Farm
Plan Workbook,
4th ed. 2013

This infosheet outlines options for your operation to ensure proper handling and disposal of livestock mortalities – normally referred to as deadstock.

For deadstock that are located in a Source Water Protection Zone, the risk management measures needed to address the risk will be determined through the Source Water Protection process in your particular area. The measures may be the same as or more than required by EFP due to the proximity to a municipal drinking water supply. For more information, contact your local municipality or check their website under Source Water Protection Planning.

All options in this infosheet are classed as **Actions** or **Compensating Factors**.

- **Actions** address the identified concern, and will change the EFP rating to (3) or Best (4).


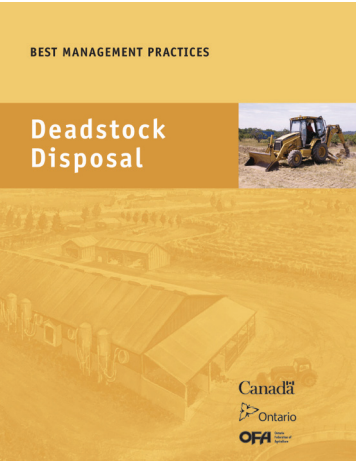
- **Compensating Factors** are alternatives that will adequately address the concern, but will not change the rating in the EFP worksheet.

If the disposal of deadstock creates off-site impacts for air or water quality, it could result in complaints to Ministry of the Environment, Conservation and Parks and a possible on-site investigation.

In most cases, you'll need more information before implementation. Sources for more information are listed at the end of this infosheet.

For help with technical terms, please see the full glossary in your EFP Workbook.

9-1. Method of disposal of deadstock

BACKGROUND	WHAT CAN YOU DO?	WHAT CAN YOU DO?
<p>Mortalities are inevitable and must be properly disposed of to safeguard everyone’s well-being. Improper management or disposal of deadstock poses risks to the environment, and to animal and public health – including the farm family’s.</p> <p>Leaving deadstock in natural areas or placing them on manure piles creates odours, attracts unwanted scavengers, predators, flies and disease, and is against the law.</p>  <p>The heat generated by microbial decomposition in the composting process destroys most pathogens.</p> 	<p>OPTION 1 – ACTION</p> <p>Hire a licensed deadstock collector (if this service is available). This relieves you of the planning and labour required for on-farm disposal.</p> <p>You will still need to identify and address biosecurity concerns. Deadstock storage and collection areas must be properly sited and screened from public view.</p> <p>OR</p> <p>Transport the deadstock to an approved facility, including an anaerobic digester, approved disposal facility, or veterinary service (if taken for post-mortem).</p> <p>Note that deadstock must not be in public view, and must be transported in a leakproof container that can be cleaned.</p> <p>OPTION 2 – ACTION</p> <p>Compost the deadstock at a suitable site, provided you maintain proper soil separation distances and the following are available:</p> <ul style="list-style-type: none"> • substrate, e.g. sawdust, wood chips • equipment – substrate chopper, loader, turning equipment, etc. • labour • spreader to land-apply compost • land for spreading. <p>See 9-13 to 9-18 for more information.</p>	<p>OPTION 3 – ACTION</p> <p>Place the deadstock in disposal vessel, provided the vessel:</p> <ul style="list-style-type: none"> • is made of impervious materials • has a duct to allow insects to enter • has a covered hatch for depositing deadstock • is properly sited. <p>See 9-19 to 9-22 for more information.</p> <p>OPTION 4 – ACTION</p> <p>Incinerate the deadstock. The incinerator must:</p> <ul style="list-style-type: none"> • be an approved two-stage incinerator • have an ETV Canada certificate. <p>Adhere to instructions in the operating and maintenance manual.</p> <p>See 9-23 for more information.</p> <p>OPTION 5 – ACTION</p> <p>Bury the deadstock, provided:</p> <ul style="list-style-type: none"> • there are no (or limited) tile drains near the burial site – more than 15 m (50 ft) separation • the layer of soil above bedrock or an aquifer is more than 0.9 metre (3 ft) • the soil type is appropriate for burial. <p>See 9-7 to 9-12 for more information.</p>

How livestock mortalities are disposed of has implications for the environment, animal and public health, and consumer confidence. This BMP book will help you compare options and implement regulation-compatible practices.

9-2. Timing and handling prior to disposal

BACKGROUND	WHAT CAN YOU DO?
<p>Handling and disposing of deadstock promptly is a key component of maintaining biosecurity on the farm. Proper disposal of deadstock will reduce the opportunity for scavenging and disease transmission.</p> <p>Proper cold or frozen storage will also result in more efficient pickup by licensed collectors.</p>	<p>OPTION 1 – ACTION</p>
	<p>Keep deadstock in a leakproof container, out of public view.</p> <p>Dispose of deadstock within 48 hours (preferably 24 hours) of the animal’s death, using an approved disposal method – unless the deadstock is being held for post-mortem.</p>
	<p>OPTION 2 – ACTION</p> <p>Store deadstock in cold storage:</p> <ul style="list-style-type: none"> • deadstock may be held in cold storage (4°C or less) for up to 14 days.
	<p>OPTION 3 – ACTION</p> <p>Store deadstock in a freezer prior to disposal:</p> <ul style="list-style-type: none"> • deadstock may be held up to 240 days in frozen storage.



A household freezer can be used to temporarily store frozen deadstock.

9-3. Transportation of deadstock on a public road prior to disposal

BACKGROUND	WHAT CAN YOU DO?
<p>Deadstock collectors have the equipment and the vehicles to effectively handle and transport deadstock. They are aware of the importance of biosecurity protocols, especially when travelling to multiple farms, and take appropriate actions to clean their vehicles.</p> <p>Deadstock should not be transported on public roads in plain view. Not only is this a violation of the Regulation, but it can result in a negative view of livestock production and agriculture as a whole.</p> <p>Producers may not use public roads to transport deadstock belonging to another producer. Also note that a permit from the Canadian Food and Inspection Agency (CFIA) is required to transport dead cattle.</p>	<p>OPTION 1 – ACTION</p>
	<p>Hire a licensed deadstock collector to transport deadstock:</p> <ul style="list-style-type: none"> • service is available in many areas of the province.
	<p>OPTION 2 – ACTION</p> <p>Transport your own deadstock on public roads, only if:</p> <ul style="list-style-type: none"> • deadstock are out of public view • the container is leakproof and can be cleaned afterwards • transport is to an approved facility.



Licensed deadstock collectors have the knowledge, equipment and the vehicles to effectively handle and transport deadstock.

See also OMAFRA factsheet:
Deadstock Disposal Options for On-Farm, Order no. 09-025

9–4. Location of on-farm disposal site in relation to nearest neighbour's closest single residence, barn, feedlot or yard

BACKGROUND	WHAT CAN YOU DO?
When selecting an on-farm disposal site, consider neighbouring residences and livestock areas. Regardless of how well deadstock is managed or how promptly, there may be occasional unpleasant odours.	OPTION 1 – ACTION
Separation distances between burial sites and feeding areas, sick pens and maternity pens ensure that diseases are not transmitted to other vulnerable animals.	Relocate the disposal site at least 150 m (500 ft) away from the single residence, barn, feedlot or yard.
	Close disposal vessels and burial sites that do not meet setback distance.
	OPTION 2 – ACTION
	Use alternative disposal methods such as a deadstock collector service.



Try to locate the disposal site as far as possible from neighbouring properties to minimize odour concerns and protect livestock health.

9–5. Location of on-farm disposal in relation to other sensitive land uses

BACKGROUND	WHAT CAN YOU DO?
Disposal sites should be chosen with regard for neighbouring residences and other sensitive areas such as parkland, industrial land, highways, community or institutional use. Regardless of how well deadstock is managed or how promptly, there may be occasional unpleasant odours or sights. Distance, if available, is usually the best solution.	OPTION 1 – ACTION
	Relocate sites for deadstock collection, composting, and incineration far enough away from sensitive land uses to achieve a 4 rating as described in the worksheet.
	Cease using disposal methods that do not meet setbacks to sensitive land.
	OPTION 2 – ACTION
	Use alternative disposal methods such as a deadstock collector service.



Keep the disposal site as far as possible from sensitive land uses such as parks and businesses.

METHODS OF DISPOSAL

9–6. Emergency planning for catastrophic losses

BACKGROUND	WHAT CAN YOU DO?
Advance emergency planning is well worth your time and effort. In the event of an emergency, an organized, effective response will help mitigate stress for you and your family during a difficult and emotional time.	OPTION 1 – ACTION
Discussing options with insurance agents can ensure you have the appropriate coverage for your operation.	Discuss emergency situations with first responders, your insurance agent, commodity groups or OMAFRA staff to explore options for disposal of deadstock.
Review and assess seasonal farm operations that may be prone to risk of fires or ventilation problems.	Create an Action Plan for reference in the event of an emergency. Emergencies may include weather extremes, e.g. flooding, ice storm, poor access in winter.
	Consider seasonal changes in the farm operation that might increase the risk of fire or ventilation problems.
	Consider seasonal differences – winter or summer – that may affect the options available for disposal.



Learn more about fire prevention measures with OMAFRA's Reducing the Risk of Fire on Your Farm, Publication 837.

BURIAL

9-7. Distance from burial pit to nearest well

BACKGROUND	WHAT CAN YOU DO?
<p>Separation distances from burial pits to wells will help to ensure a safe source of drinking water for the farm family, livestock and neighbouring communities.</p>	<p>OPTION 1 – ACTION</p>
	<p>Immediately cease use of any burial site that is too close to a well.</p>
	<p>OPTION 2 – ACTION</p>
	<p>Select new location for burial sites based on the potential for ground water contamination and distance to nearest well that results in a rating of 3 or higher.</p>

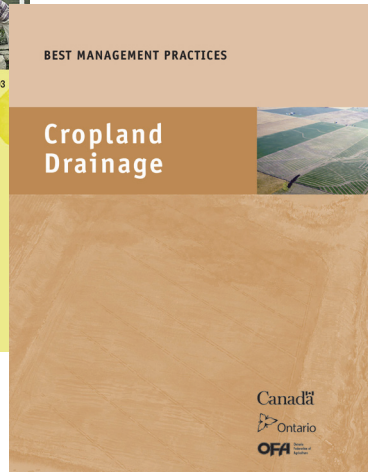
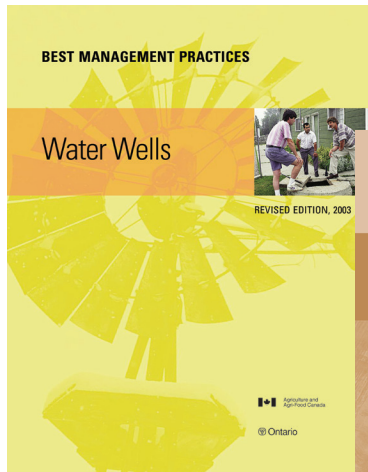


It is essential to choose a site that allows for proper decomposition and reduces the risk of surface water and groundwater contamination

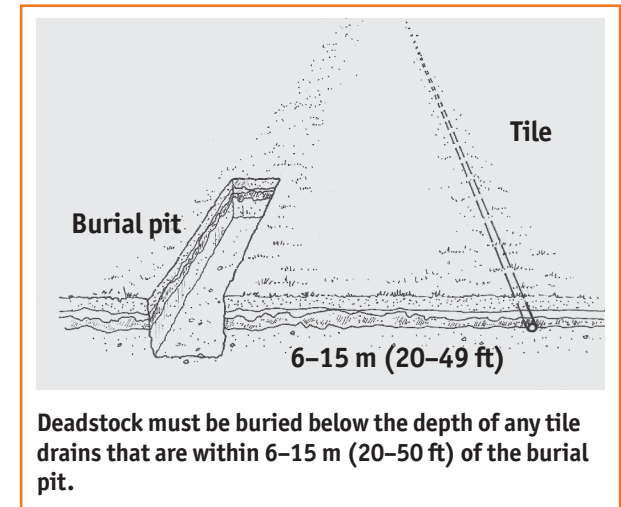
9-8. Distance from burial pit to field drainage tile

BACKGROUND	WHAT CAN YOU DO?
<p>Leachate from a burial pit could potentially enter a field drainage tile, and then be discharged into surface water. This is both a potential biosecurity risk and a source of contamination.</p> <p>Also, excavating near a field drainage tile increases the risks that the tiles themselves will be harmed.</p>	<p>OPTION 1 – ACTION (PLANNING)</p>
	<p>Properly abandon burial site and establish a new burial site that is farther than 15 m (50 ft) from the drainage tile.</p>

Regardless of what kind of well you have, this BMP publication will help you better understand its construction, risk factors to water quality, maintenance and troubleshooting, and procedures for unused wells.



For more information about in-field drainage, see this BMP publication. Cropland Drainage explains how surface and subsurface drainage systems function, and presents options for improvement, construction, maintenance, and troubleshooting.



Deadstock must be buried below the depth of any tile drains that are within 6-15 m (20-50 ft) of the burial pit.

9-9. Distance from burial pit to nearest surface water or tile inlet

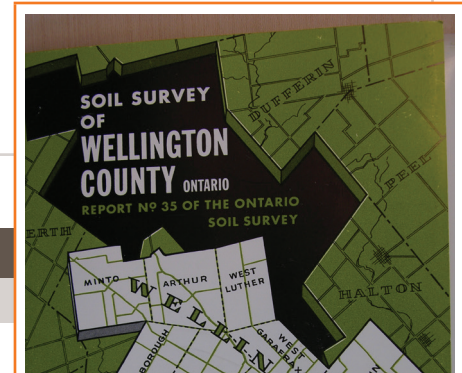
BACKGROUND	WHAT CAN YOU DO?
<p>Burial of deadstock near surface water can increase the risk that it will heave out of the ground during rainfall or spring flooding events.</p> <p>Deadstock buried too close to surface water or tile inlets increases the risk that surface water will be contaminated.</p>	<p>OPTION 1 – ACTION (PLANNING)</p> <p>Select a new location for burial sites based on the potential for surface water contamination and distance of flow path that results in a rating of 3 or higher.</p>



As the flow-path distance from a surface inlet to a burial pit increases, the risk of contaminated overland flow reaching surface water decreases.

9-10. Burial pit soil conditions

BACKGROUND	WHAT CAN YOU DO?
<p>Adequate soil cover is necessary to reduce the risks of scavenging and disease transmission.</p> <p>The soil microbes responsible for decomposition are most effective in soils that are not too dry or too wet.</p> <p>An adequate separation distance between the bottom of the burial pit and the aquifer is needed to ensure that any leachate is properly managed by the soil organisms.</p>	<p>OPTION 1 – ACTION</p> <p>Dig a test pit in area of future burial site to verify:</p> <ul style="list-style-type: none"> • there is more than 0.9 m (3 ft) of soil cover over bedrock or aquifer • it is not located on organic soil, sandy, sandy loam, or loamy sand soil. <p>Verify Conservation Authority flood mapping to ensure selected area for burial is not prone to flooding.</p>



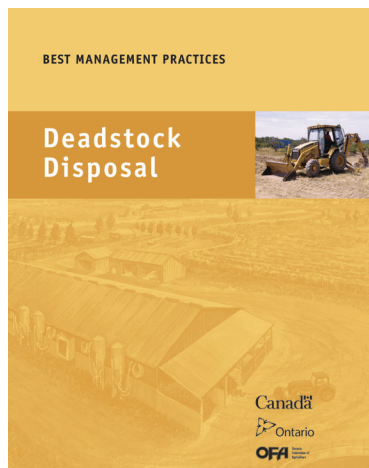
Use a soil map, legend and report to shortlist candidate sites on your property.

9-11. Volume of deadstock in a burial pit and distance between burial pits

BACKGROUND	WHAT CAN YOU DO?
<p>The greater the contact between the surface of the deadstock and the soil microbes, the faster the rate of decomposition in the burial pit.</p> <p>Smaller burial pits, with a distance between pits, maximize the ability of soil microbes to decompose buried deadstock.</p>	<p>OPTION 1 – ACTION</p> <p>Identify several burial pit locations, separated by more than 60 m (197 ft), and do not dispose of any more than 2,500 kg (5,500 lb) in any one burial pit.</p>



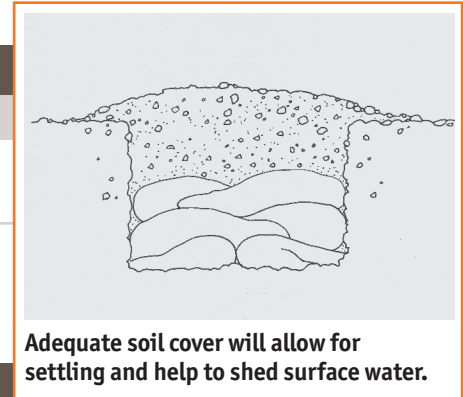
There should not be more than 2,500 kg (5,500 lb) of deadstock in a single burial pit.



Siting considerations and other key management facets for the burial option are described in full on pages 84-93.

9–12. Soil cover

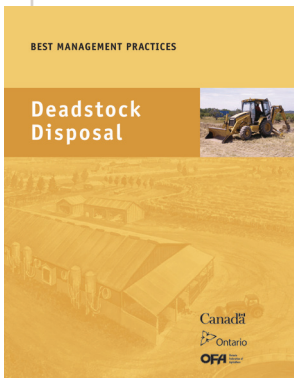
BACKGROUND	WHAT CAN YOU DO?
As deadstock decomposes, there can be settling within the burial pit. This depression may result in surface runoff accumulating in the area, decreasing the rate of decomposition.	OPTION 1 – ACTION Mound the soil over the burial pit enough to compensate for the settling of soil once the deadstock has decomposed.



COMPOSTING

9–13. Distance from composting site to nearest well

BACKGROUND	WHAT CAN YOU DO?
<p>There may be occasional leachate from composting sites, and it is important to keep this water away from sources of drinking water.</p> <p>Do not allow leachate to accumulate near water wells.</p>	OPTION 1 – ACTION Relocate the composting site away from the well. Decommission the previous site if necessary by removing the composting material. If the material is fully composted, it could be land-applied. Add substrate to the existing pile to reduce the risk of leaching while the relocated composting site is being completed.
<p>To learn more about composting, see pages 50–70 in this BMP publication.</p>	OPTION 2 – ACTION Select a new location for the well that gives you a rating of 3 or more, and properly abandon and plug the old well according to Regulation 903 of the Ontario Water Resources Act.
	OPTION 3 – ACTION Regularly test the well water for bacterial contamination. Take immediate action if it tests positive.



9–14. Distance from composting site to field drainage tile

BACKGROUND	WHAT CAN YOU DO?
Leachate from a composting site could potentially enter a field drainage tile, and then be discharged into surface water. This is both a potential biosecurity risk and source of contamination.	OPTION 1 – ACTION Relocate the composting site more than 10 m (33 ft) away from drainage tile – the more separation, the better. Decommission the site if necessary by removing the composted material. If the material is fully composted, it could be land-applied or placed into the manure storage.



9–15. Distance from composting site to nearest surface water or tile inlet

BACKGROUND	WHAT CAN YOU DO?
Composting deadstock near surface water can increase the risk that rainfall or spring flooding events will negatively affect decomposition.	OPTION 1 – ACTION
Excess water may decrease the temperatures inside the pile that are required for proper decomposition.	Select a new location for composting sites based on the potential for surface water contamination and distance to nearest surface water or tile inlet that results in a rating of 3 or higher.
Deadstock composted too close to surface water or tile inlets increase the risk of surface water contamination.	Decommission the previous site if necessary by removing the composed material. If the material is fully composted, it could be land-applied or placed into the manure storage.



The flow path from a composting site to surface water or tile inlet should exceed 75 m (250 ft).

9–16. Management of compost pile

BACKGROUND	WHAT CAN YOU DO?
You can think of composting like a recipe. Appropriate quantities, mixing and management of the deadstock and substrate will ensure successful composting.	OPTION 1 – ACTION
Consult the BMP booklet Deadstock Disposal for technical information on composting. See pages 50–70.	Add appropriate substrates to the pile, or add additional amounts so that no parts of the deadstock are visible, and the ratio of substrate to deadstock is 75:25.
	Add substrate to soak up leachate that emanates from the pile.
	Divert clean, upslope water away from the compost pile to reduce the potential for leachate.
	Turn compost pile at regular intervals as needed for good composting.
	Note: If scavenging is a problem, especially for windrows, then it may be necessary to use a compost bin system instead. Gates can be added to a bin system to keep scavengers out. A roof or tarp over a compost site will divert clean water, preventing it from mixing with compost and producing runoff.



A roofed compost site will divert clean water from mixing with compost and producing runoff.


9–17. Composting site soil conditions

BACKGROUND	WHAT CAN YOU DO?
The soil under the compost pile absorbs nutrients and acts as a filter between the pile and the aquifer below.	OPTION 1 – ACTION
An impervious base, such as concrete, can make it much easier to move compost with farm machinery. Any liquid coming off the pile or the base can be absorbed with additional substrate.	Relocate the composting site to an area with appropriate soil type(s) that has more than 0.9 m (3 ft) of soil cover over bedrock or aquifer, and is not located in any flood plain or area prone to flooding.
	OPTION 2 – ACTION
	Construct an impervious base (e.g. concrete, asphalt) for the composting site.



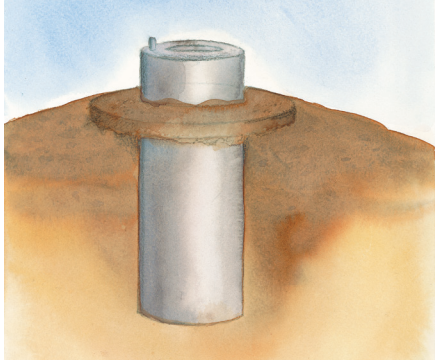
If the compost pile will be mixed and emptied with a loader, a concrete floor is preferred for ease of use, cleanliness and runoff management.

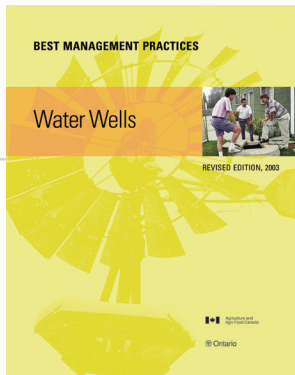
9-18. Land application of dead animal compost

BACKGROUND	WHAT CAN YOU DO?	
<p>Properly composted material can be a valuable nutrient source for cropland.</p> <p>Improperly composted material containing partially decomposed materials is a biosecurity risk to the farm, and encourages scavengers.</p> <p>The Canadian Food Inspection Agency (CFIA) recommends that compost produced from Specified Risk Material (SRM) is not spread on pasture land or on land directly used to graze domestic ruminants. If SRM is spread on pasture or grazing land, then do not allow ruminants access to these fields for at least five years.</p> <p>Federal regulations prohibit the sale or removal of on-farm composted material containing SRM from the farm of origin. Distribution or sale of on-farm compost is also contrary to the Nutrient Management Act, 2003 (NMA) Disposal of Dead Farm Animals Regulation.</p>	<p>OPTION 1 – ACTION</p> <p>Land-apply completely composted material to cropland (not on pasture or land used to graze ruminants) that is owned or controlled by the farmer.</p> <p>As with other nutrient sources, application rate should match agronomic requirements of the field crops.</p> <p>Keep records of the location of compost sites, the volumes, deadstock records, the location of spreading sites, and volumes spread.</p>	 <p>Properly finished compost should not contain any recognizable parts of deadstock.</p>

DISPOSAL VESSEL

9-19. Distance from disposal vessel to nearest well

BACKGROUND	WHAT CAN YOU DO?	
<p>A disposal vessel must be leakproof when installed. Over time, it may deteriorate. Therefore it is important to have adequate separation distance between the vessel and a well to reduce the risk of contaminating well water.</p>	<p>OPTION 1 – ACTION</p> <p>Close disposal sites located too close to well.</p> <p>OPTION 2 – ACTION</p> <p>Select disposal vessel site based on the potential for ground water contamination and distance to nearest well that results in a rating of 3 or higher:</p> <ul style="list-style-type: none"> • 76 m (250 ft) away from a drilled well • 150 m (500 ft) from a bored, dug or sand point well • 250 m (820 ft) from a municipal well. 	 <p>Disposal vessels are scavenger-proof, leakproof containers into which deadstock is placed to decompose naturally.</p>



If you want to learn more about how your well works, and how to safeguard well water quality, see this BMP publication.

9–20. Distance from disposal vessel to field drainage tile

BACKGROUND	WHAT CAN YOU DO?
<p>A disposal vessel must be leakproof when installed. Over time, it may deteriorate. Therefore it is important to have adequate separation distance between the vessel and field drainage tile to reduce the risk of contaminants flowing into the tile.</p> <p>In addition, excavation for the disposal vessel may harm the field tiles themselves if done too closely.</p>	<p>OPTION 1 – ACTION</p> <p>Close disposal sites that are not situated properly.</p> <p>Choose a new location for future disposal vessels that is greater than 15 m (49 ft) from a field drainage tile.</p>



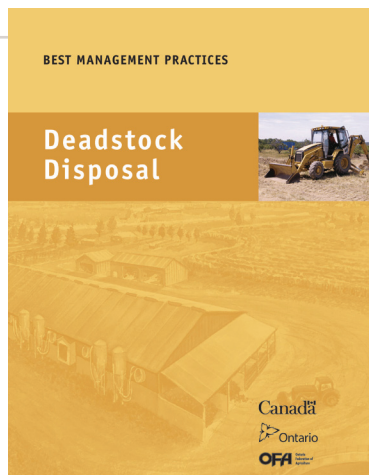
To reduce the risk of contaminants flowing into the tile and reaching surface water, maintain an adequate separation distance – greater than 15 m (49 ft) – between the disposal vessel and field drainage tile.

9–21. Distance from disposal vessel to nearest surface water or tile inlet, or in an area prone to flooding

BACKGROUND	WHAT CAN YOU DO?
<p>Disposal vessels buried near surface water can increase the risk that the vessel will heave out of the ground during rainfall or spring flooding events. Deadstock vessels too close to surface water or tile inlets increase the risk that surface water will be contaminated.</p> <p>Water that enters the disposal vessel will greatly reduce or even prevent decomposition of the deadstock. Successful decomposition within a disposal vessel relies on the air flow through the vent, and the flies and insect populations within the vessel.</p>	<p>OPTION 1 – ACTION</p> <p>Close disposal sites that are not situated properly.</p> <p>Choose a new location that has a flow path of at least 151 m (495 ft) from surface water or a tile inlet, and not in an area prone to flooding.</p> <p>OPTION 2 – ACTION</p> <p>Select a new location for disposal vessel site based on potential for surface water contamination and distance to nearest surface water inlet or area prone to flooding:</p> <ul style="list-style-type: none"> • the new location should result in a rating of 3 or higher.



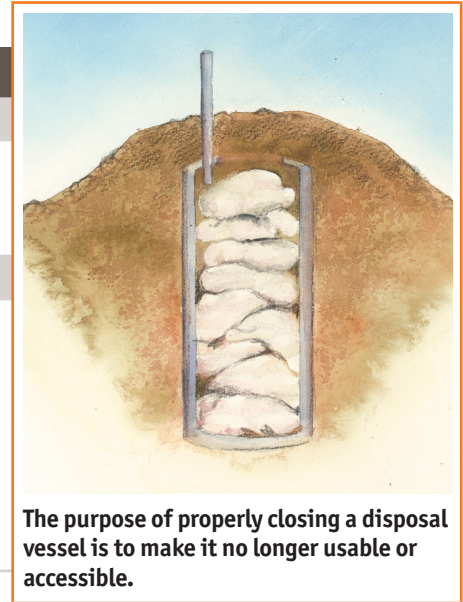
Disposal vessels buried near surface water can increase the risk that the vessel will heave out of the ground during rainfall or spring flooding events.



For more information about proper design, use and management of disposal vessels, see pages 75–83 in this BMP publication.

9-22. Design of disposal vessel

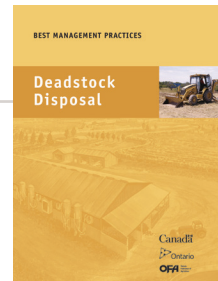
BACKGROUND	WHAT CAN YOU DO?
<p>Successful use of disposal vessels depends on preventing water from entering the vessel, and having an open vent that allows the flies and insects responsible for decomposition to enter.</p> <p>Leakproof vessels allow heat to be generated, which increases the opportunity for insects to further the decomposition process.</p>	<p>OPTION 1 – ACTION</p> <p>Stop using and properly close disposal vessels immediately that do not meet the design standards – see Option 2. Find an alternative acceptable disposal method such as licensed pickup, proper burial etc.</p> <p>OPTION 2 – ACTION</p> <p>Find and/or modify a container for use as a disposal vessel that meets the following requirements:</p> <ul style="list-style-type: none"> • leakproof • volume no greater than 10 m³ • impervious when installed • a duct to allow insects to enter • a covered hatch for depositing deadstock.



INCINERATION

9-23. Type of incinerator

BACKGROUND	WHAT CAN YOU DO?
<p>The majority of deadstock disposal options are focused on reducing the risks of surface and ground water contamination.</p> <p>Incinerators pose a different kind of risk: air emissions.</p> <p>An incinerator that is operated improperly or otherwise malfunctioning can result in odour and smoke complaints from neighbouring properties.</p> <p>Improper operating temperatures can decrease the efficiency of the equipment, using additional fuel and energy to incinerate the deadstock.</p> <p>Maintaining the incinerator according to the manufacturer's recommendations can extend the life of the equipment.</p>	<p>OPTION 1 – ACTION</p> <p>Replace the incinerator with a unit that meets the requirements of the Verification Certificate from ETV Canada.</p> <p>Also:</p> <ul style="list-style-type: none"> • keep records of the temperatures in the combustion chambers at all times during incineration • perform regular maintenance on the incinerator according to the manufacturer's specifications • ensure that loading rates are adhered to – putting too much deadstock in at one time will decrease the efficiency of the combustion in the unit and increase the maintenance requirements • only burn deadstock in the incinerator.



To learn more about the incineration option, see pages 71-74 in this BMP publication.

FOR MORE INFORMATION

Ontario Ministry of Agriculture, Food and Rural Affairs

Many sources of supplementary information are available. Below are some suggestions to get you started. Most can be found online at www.ontario.ca/omafra or ordered through ServiceOntario.

Deadstock Disposal Options for On-Farm, Order no. 09-025
Reducing the Risk of Fire on the Farm -- Preventing Fire Spread, Publication 837

BEST MANAGEMENT PRACTICES

BMP publications are excellent sources to better understand on-farm environmental issues and discover a range of proven, practical options to address them. These materials are available at no charge to Ontario farmers. Below are a few of the titles. To order these and others, see ServiceOntario information.

Buffer Strips
Controlling Soil Erosion on the Farm
Cropland Drainage
Deadstock Disposal
Establishing Tree Cover
Field Crop Production
Managing Crop Nutrients
Manure Management
No-Till: Making it Work
Phosphorus Primer
Streamside Grazing
Water Management
Water Wells
Woodlot Management

Inquiries to the Ontario Ministry of Agriculture, Food and Rural Affairs

Agricultural Information Contact Centre
Ph: 1-877-424-1300
Email: ag.info.omafra@ontario.ca
Web: www.ontario.ca/omafra

Many resources can be ordered through Service Ontario

Online at ServiceOntario Publications –
www.ontario.ca/publications

By phone through the ServiceOntario Contact Centre
Monday–Friday, 8:30 am–5:00 pm
416-326-5300
416-325-3408 TTY
1-800-668-9938 Toll-free across Ontario
1-800-268-7095 TTY Toll-free across Ontario

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Best Management Practices publications present in-depth explanations, tips and advice for Ontario farmers.