

10.4 AGRICULTURAL THREATS

10.4.1 Agricultural Source Material (ASM)

Definition

Agricultural Source Material (ASM) is a class of nutrients that can be applied to land for the purpose of improving the growth of agricultural crops and soil conditioning. Ontario Regulation 267/03 under the *Nutrient Management Act, 2002*, lists the following sources of ASM that may be produced, applied, stored, handled, or used on a farm:

- manure produced by farm animals (includes bedding materials);
- runoff from farm-animal yards and manure storages;
- wash water that has not been mixed with human body waste (e.g., from the milking centre);
- organic materials produced by intermediate operations that process the above materials (e.g., mushroom compost);
- anaerobic digestion output that does not include sewage biosolids or human body waste; and
- regulated compost (which contains dead farm animals).

Storing ASM can be at or above grade in a permanent nutrient storage facility or on a temporary field nutrient storage site (solid ASM only).

Why is ASM a Threat to Drinking Water Sources?

A number of chemicals and pathogens from ASM could make their way into drinking water sources. The Ministry of the Environment and Climate Change's *Tables of Drinking Water Threats* identifies the following sub-threat activities:

- The application of ASM to land (see circumstances #1-18, 1944)
- The storage of ASM (see circumstances #1201-1224, 1962-1964)
- The management of ASM – aquaculture (see circumstance #1955)
(Note: there are no existing or future significant threats possible for management of ASM)

ASM threats can occur on large or small farms – those regulated by the *Nutrient Management Act, 2002* (producing more than 300 nutrient units or phased-in) and those not regulated by the *Act* (producing less than 5 nutrient units or not yet phased-in). ASM is produced on farms with livestock, and under certain conditions, there are specific chemicals and pathogens that are able to make their way from

ASM application and storage sites into groundwater drinking sources. The Ministry of the Environment and Climate Change's *Tables of Drinking Water Threats* identifies the following chemicals and pathogens as potential concerns:

- Nitrogen
- Total phosphorus
- Pathogens

Nitrogen is a concern for surface and groundwater, while phosphorus is only a concern for surface water, for example, in WHPAs where the wells are assessed as GUDI (groundwater under the influence of surface water). Permanent nutrient storage facilities are generally (but not always) located near barns and outdoor confinement areas. Temporary field nutrient storage facilities can be located near barns and outdoor confinement areas, as well as on fields where the ASM will be applied. The storage and application of ASM as potential threats to drinking water sources, is dependent on the vulnerability score of the specific area, and the combination of the percentage of managed land² and density³ of livestock in the vulnerable area.

See

for when and where application and storage of ASM may be a significant drinking water threat. Note: to determine if a specific activity is a significant drinking water threat consult the *Tables of Drinking Water Threats* for the specific circumstances that must be met for the activity to be a threat. These activities may also be significant drinking water threats anywhere within an Issue Contributing Area (ICA) for Nitrates or Pathogens. If the activity meets the description in Column 2 of the *Tables of Drinking Water Threats* it is a significant drinking water threat irrespective of vulnerability score.

² "Managed land": includes cropland, fallow land, improved pasture, golf course, sports fields and lawns to which ASM, NASM or commercial fertilizer could be applied.

³ "Livestock density" is the number of farm animals in a given area. It is standardized to **nutrient units per acre** to account for the fact that different types of animals produce different amounts of manure with different nutrient values. One (1) nutrient unit is the equivalent of 43 kilograms of nitrogen or 55 kilograms of phosphorus fertilizer. Please consult the local source protection authority to obtain information on the above calculations for a specific property.

Prescribed Drinking Water Threat	ASM Threat Sub-Category	Area and Vulnerability Score (VS)
The application, storage and management of agricultural source material	The application of agricultural source material to land	<ul style="list-style-type: none"> • WHPA-A • WHPA-B (VS = 10) • WHPA-E (VS ≥ 8) • Anywhere in an ICA for Nitrates or Pathogens
	The storage of agricultural source material	<ul style="list-style-type: none"> • WHPA-A • WHPA-B (VS = 10) • WHPA-E (VS ≥ 8) • Anywhere in an ICA for Nitrates or Pathogens
	The management of agricultural source material – aquaculture	<ul style="list-style-type: none"> • Anywhere in WHPA-E in an ICA for Pathogens

Table 10-4: When/where ASM may be a significant drinking water threat

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-1	Application of Agricultural Source Material (ASM) to Land	OMAFRA	C	<p>Prescribed Instrument</p> <p>1) The application of ASM to land shall be prohibited where the activity is, or would be, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-A (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Pathogens (future); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (future). 	See Maps 1.1 - 1.21	<p>Future: Immediately (T-3)</p> <p>Existing: Upon expiry or within 5 years (T-2)</p>	N/A	MON-4
				<p>2) Where the application of ASM to land is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat. In addition to any other risk management measures required through the Prescribed Instrument, the Prescribed Instrument shall as a minimum ensure:</p> <p>a) the application of ASM is not applied during restricted periods, or any other time when the soil is snow covered or frozen consistent with the limitations of subsection 52.2 – 52.4 of Ontario Regulation 267/03 under the <i>Nutrient Management Act, 2002</i> to avoid runoff; and</p> <p>b) soil testing is required for plant available nitrogen each year prior to application of ASM to determine appropriate application rates, in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-B (VS = 10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Nitrates (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Pathogens (existing); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (existing); or • the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future). 		<p>Future: Immediately (T-3)</p> <p>Existing: 3 years (T-1)</p>	GEN-3	MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-2	Application of Agricultural Source Material (ASM) to Land	RMO	G	<p>Part IV, s.57, s.58</p> <p>For farms that do not require a Nutrient Management Plan or Strategy, where the application of ASM is, or would be, a significant drinking water threat, the following actions shall be taken:</p> <p>1) The application of ASM is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat is, or would be significant, in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-A (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Pathogens (future); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (future). 	See Maps 1.1 - 1.21	<p>Future: Immediately (T-5)</p> <p>Existing: 180 days (T-4)</p>	GEN-1	MON-2
			H	<p>2) The application of ASM is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be significant. In addition to any other risk management measures required through the risk management plan, the risk management plan shall as a minimum ensure:</p> <p>a) the application of ASM is not applied during restricted periods, or any other time when the soil is snow covered or frozen consistent with the limitations of subsection 52.2 – 52.4 of Ontario Regulation 267/03 under the Nutrient Management Act, 2002 to avoid runoff; and</p> <p>b) soil testing is required for plant available nitrogen each year prior to application of ASM to determine appropriate application rates, in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-B (VS = 10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Nitrates (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Pathogens (existing); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (existing); or • the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future). 		<p>Future: Immediately (T-7)</p> <p>Existing: 1 year/ 5 years (T-6)</p>	GEN-1 GEN-2	MON-2

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-3	Storage of Agricultural Source Material (ASM)	OMAFRA	C	<p>Prescribed Instrument</p> <p>1) The storage of ASM shall be prohibited where the activity would be a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-A (future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Nitrates or Pathogens (future); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (future). 	See Maps 1.1 - 1.21	Future: Immediately (T-3)	N/A	MON-4
				<p>2) Where the storage of ASM is in an area where the activity is, or would be, a significant drinking water threat, the Nutrient Management Plan or Strategy that governs the activity shall be reviewed or established to ensure appropriate terms and conditions are included so that the activity ceases to be, or does not become, a significant drinking water threat in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-A (existing); or • WHPA-B (VS = 10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (existing); or • the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future). 		Future: Immediately (T-3) Existing: 3 years (T-1)	GEN-3	MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
ASM-4	Storage of Agricultural Source Material (ASM)	RMO	G	<p>Part IV, s.57, s.58</p> <p>For farms that do not require a Nutrient Management Plan or Strategy, where the storage of ASM would be a significant drinking water threat, the following actions shall be taken:</p> <p>1) The storage of ASM is designated for the purpose of s.57 under the <i>Clean Water Act</i>, and is therefore prohibited where the threat would be significant in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-A (future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Nitrates or Pathogens (future); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (future). 	See Maps 1.1 - 1.21	Future: Immediately (T-5)	GEN-1	MON-2
			H	<p>2) The storage of ASM is designated for the purpose of s.58 under the <i>Clean Water Act</i>, requiring risk management plans, where the threat is, or would be significant, in any of the following areas:</p> <ul style="list-style-type: none"> • WHPA-A (existing); or • WHPA-B (VS = 10) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-E (VS ≥ 8) which is not in an Issue Contributing Area for Nitrates or Pathogens (existing, future); or • WHPA-B (VS = 10) in an Issue Contributing Area for Nitrates or Pathogens (existing); or • WHPA-E in an Issue Contributing Area for Nitrates or Pathogens (existing); or • the remainder of an Issue Contributing Area for Nitrates or Pathogens (existing, future). 		Future: Immediately (T-7) Existing: 1 year/ 5 years (T-6)	GEN-1 GEN-2	MON-2
ASM-5	Management of Agricultural Source Material (ASM) (Aquaculture)	MOECC	C	<p>Prescribed Instrument</p> <p>The management of ASM (aquaculture) shall be prohibited where the activity is, or would be, a significant drinking water threat in the following areas:</p> <ul style="list-style-type: none"> • An Issue Contributing Area for Pathogens (existing, future). 	See Map 1.9	Future: Immediately (T-3) Existing: Upon expiry or within 5 years (T-2)	N/A	MON-4