Fertilizing Residuals and the new “Permit-by-notification” system – Quebec, Canada

October 2017
Presented by: Serge Loubier
Agenda

- Englobe: Who we are
- Soil & Biomass Treatment Centers Division
- A Case for Biosolids Recycling
- Fertilizing Residuals Materials Management Options & Context
  - Land Application Option
  - Farm slurry Lagoon Option
  - Degraded Sites Option
  - Composting Facility Option
- Conclusion
History: who we are

Evolution of EnGlobe

(1961) Year founded
Locations: where we are

- Canada
- France
- United Kingdom

- 60 Business Offices worldwide
- 30 Materials Testing Labs across Canada
- 25 Soil and organic Treatment Facilities worldwide
Services: what we do

- Treatment, Management and Recycling
- More than 35 years of experience
- 325 000 metric tons of organic waste reused per year
- 100 000 mt received at our composting sites
A Case for Biosolids Recycling
A Case for Biosolids Recycling

Easy: Great products and clients in need of fertilizers and of savings!
Recycled Residuals Management Options

- A) Land application
- B) Storage on farms: slurry pits/lagoons
- C) Site remediation
- D) Composting
Option A: Recycling on agricultural lands

- Permit by notification
  - Greatly reduced the paperwork and delays for land app
  - The formal notification is not analyzed by the MOE- checks for it to be complete
  - Responsibility relies on the Agronomist
  - Role of the agronomist and certified technician enforced
- Simplified management for certified products
- BNQ certified products
Option A: Role of the Order of Agronomists of Qc

- All formal notifications and C of A requests must be signed by an agronomist.
- All fertilization recommendations must be written by an agronomist.
- A certified technician in agronomy must conduct the site inspection/visits; however he/she must be immediately supervised by an agronomist.
- The technician may pursue sales functions for the application of biosolids and collect client info so long as they do not recommend dosing or conduct diagnostics.
Option A: Current Legislative Guidelines

- Simplifies the process: reduces risk related to permitting - timing
- Speeds up the approval process: 10 days
- Cost savings for generators: competitive market
- Land app works great in nice weather...
- Importance of plan B - C - D
Option A: Limits/Constraints with land application

- Each year, FRM land applications are conducted between April 1st – October 1st.
- Regardless of the date, land application must be conducted under:
  - Dry conditions;
  - On unfrozen soil;
  - Without snow accumulation;
  - With a N-NH4 ratio / N < 30 % (after 1st of Oct).
Option A: Limits/Constraints with land application

The FRM land application distance limits are established as a function of:

- the P category (Pathogen: P1 or P2);

- the O category (Odors: O1, O2, O3, and ☹ ) of the applied materials:
  - O1: little or no odors: wood ash, compost, paper mill and deinking sludge C/N > 70 (typically less than cow manure);
  - O2: odorous: septic sludge, lime stabilized biosolids, most conditioned biosolids
  - O3: biosolids from aerobic process, Kraft paper mill biosolids or C/N < 50, limed slaughterhouse sludge, etc. (> cow manure, < pig manure);
  - Beyond (> O3): the nasty stuff! Anaerobically digested biosolids - HS centrifuge, Kraft paper mill biosolids C/N < 50, primary slaughterhouse sludge (> pig manure).
Option A: Limits/Constraints with land application

- **Odor classification of the materials**
  - Specific for each process and material
  - Information in the Guide + resource at MOE

- **Smell test panel – olfactometry**
  - Can reduce the category
  - Requires time and planning
  - Brings savings
  - Category change by the MOE
## Option A: Land application distances

<table>
<thead>
<tr>
<th>Environment</th>
<th>Location</th>
<th>Basic requirements</th>
<th>Additional requirements (P2 or O2/O3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground water</td>
<td>Groundwater catchment work intended to supply drinking water for human consumption - category 3 (individual wells)</td>
<td>30 m (100 m if the FR is contaminated with human fecal matter, except for products certified by the BNQ.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other groundwater catchment work intended to supply drinking water for human consumption</td>
<td>varies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peat bog and organic soil (&gt; 30% organic matter d.w.)</td>
<td></td>
<td>P2 : Prohibited</td>
</tr>
<tr>
<td>Surface water</td>
<td>Agricultural ditch</td>
<td>1m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ditch in a non-agricultural environment</td>
<td>1m</td>
<td>P2: 10m</td>
</tr>
<tr>
<td></td>
<td>Watercourse, lake, swamp, pond or natural marsh</td>
<td>3m</td>
<td></td>
</tr>
<tr>
<td>Air (bio aerosols)</td>
<td>Property line</td>
<td></td>
<td>P2: 10m</td>
</tr>
<tr>
<td></td>
<td>Road</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dwelling or protected immovable</td>
<td></td>
<td>P2: 100m</td>
</tr>
<tr>
<td>Air (odors)</td>
<td>Dwelling or protected immovable</td>
<td></td>
<td>O2 : 75m (O3 : 500m), except where it is incorporated into the soil immediately</td>
</tr>
<tr>
<td>Air (dust)</td>
<td>Dwelling or protected immovable</td>
<td>Visible dust must not be carried further than 2m within a neighboring property.</td>
<td></td>
</tr>
</tbody>
</table>
Option A: Limits/Constraints with storage

Other constraints (not related to distance) must also be considered:

- Prohibited to store FRMs on soils, if dryness ratio < 15 %;
- Stored quantities must be lower than (250 m$^3$ or 500 m$^3$) depending on the FRMs between November 23 - 30 of each year;
- Winter storage of FRMs having a dryness ratio inferior to 30 % (all municipal biosolids) must be:
  - Encapsulated with 30 cm (1 ft) of compost or deinking residues;
  - Winter cover tarps.
## Option A: Limits/Constraints with storage

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<td>Ground water</td>
<td>Individual wells and other groundwater catchment works intended for human consumption</td>
<td>100m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rock outcrop</td>
<td>100m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Field stockpiled manure</td>
<td>100m</td>
<td></td>
</tr>
<tr>
<td>Surface water</td>
<td>Agricultural or non-agricultural ditch</td>
<td>15m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drainage furrow (dead furrow or plough furrow or grassed waterway)</td>
<td>1m</td>
<td>5m (3m for FR with dryness ≥ 20 %)</td>
</tr>
<tr>
<td></td>
<td>Watercourse, lake, swamp, pond or natural marsh</td>
<td>50m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flood plains (0-20 years)</td>
<td>Prohibited from November 23 to May 31</td>
<td></td>
</tr>
<tr>
<td>Air (bio aerosols)</td>
<td>Dwelling or protected immovable</td>
<td>100 m</td>
<td></td>
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<td>Dust must not be carried further than 2m within a neighboring property</td>
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Option B: Farm Slurry Lagoons

- Lagoon/tank type: liquid or solid
- Regulatory aspects of management in farm lagoons
- Odor issue and MRF mixing
- Acceptability – Odor!
Option C: Degraded Sites

- A revegetation project: create a complete and sustainable growing media
- Agronomy: similar to land application
- Regulatory aspects: certificate of authorization + delays
- Social acceptability issues
Option C: Jeffrey Mine (Asbestos Qc.)
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Option D: Composting Facilities

- Diversion program by 2020 L&Y + Food waste
- Contingency option for land applicable materials
- Compost products
  - Horticultural market: BNQ
  - Agricultural market: land application regulation
  - Soil health: benefits!!
U.S. – Canada Synergy

- US material can be recycled / land-applied, but in respect of Quebec’s regulation
- French !!!
- Manage social acceptability
- Same diversion challenge for organics in Quebec and Northeastern US
Conclusion

- Let’s continue to build the value of the product.
- Let’s demonstrate management success.
- Let’s convince that the organic recycling challenge comes with benefits for the environment.