

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

## 1. Introduction

The Ministry of Environment intends to establish a “code of practice” (minister’s regulation) that addresses discharges to the environment from the slaughter and poultry processing industries under provisions of the *Environmental Management Act* (EMA) and the Waste Discharge Regulation (WDR). A code of practice is a legally binding and enforceable set of rules that must be followed – the environmental protection measures and other actions that are expected of the industries by the ministry.

The EMA and WDR were brought into force in July 2004. Under the legislation, introductions of waste from identified “prescribed” industries, trades, businesses, operations and activities require authorization (e.g., permit or approval) from the ministry. The WDR also contains provisions for establishing codes of practice issued by the minister as a form of authorization for designated industries, trades, businesses, operations and activities. The slaughter industry and poultry processing industry are both prescribed in the WDR and have waste discharges with common issues and requirements for control or mitigation. The ministry is intending to develop a single code of practice for the two industries (see section 4 of this intentions paper).

The development process for the code of practice consists of five phases:

1. **Scoping** – including a review of regulatory approaches in other jurisdictions and current best management practices.
2. **Policy Intentions Paper for Consultation** – (intentions paper) outlining the ministry’s proposed policy intent for the code of practice/regulatory review, proposed content of the code/regulation and any outstanding issues or questions.
3. **Consultation** – with affected stakeholders and the general public, using the intentions paper and response forms posted on the ministry website, and other means as required.
4. **Drafting** – preparation of legal language for consideration by the Minister and/or Lieutenant Governor-in-Council.

5. **Implementation** – training of ministry staff and external stakeholders, development of guidelines and/or best management practices.

The purpose of this intentions paper is to seek responses and comments from stakeholders and the public on the proposed provisions for the slaughter and poultry processing industries code of practice.

This intentions paper provides a summary of the ministry’s mandate and objectives, background information regarding the nature and potential environmental impacts of the slaughter and poultry processing industries, proposed provisions of the code of practice and information on the development of best management practices and assuring compliance. The paper also describes the avenues for providing comment on the proposed code of practice, and the final section lists a table of acronyms and abbreviations.

The intentions paper and response form for providing comments to the ministry, as well as further information and links to related legislation, are posted on the ministry’s website. The information can be accessed by clicking on the address below, or from the Ministry of Environment homepage, by following the Environmental Protection Division and Environmental Management Branch links. See: [www.env.gov.bc.ca/epdiv/ema\\_codes\\_of\\_practice/index](http://www.env.gov.bc.ca/epdiv/ema_codes_of_practice/index).

## 2. Ministry and Government Goals

The Ministry of Environment provides leadership in environmental management through innovative legislation and programs, compliance activities and shared stewardship initiatives. The ministry’s mandate is to protect human health and safety, and maintain and restore the diversity of native species, ecosystems and habitats. The ministry’s core business areas include environmental protection, stewardship and compliance, in support of the government’s goals.<sup>1</sup>

<sup>1</sup> The ministry continues to support the government’s objectives – to lead the world in sustainable management, with the best air and water quality, and the best fisheries management, bar none; to lead the way in North America in healthy living and physical

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

The development and enactment of the *Environmental Management Act* and its associated regulations facilitates implementation of outcome-based regulations that provide clear roles for governments and stakeholders, consistent performance standards, updated fee structures, decreased remedial and legal costs, and a greater focus on those not in compliance with regulatory requirements.

## **3. Background Information**

### **3.1 The slaughter and poultry processing industries**

*Meat processing* (“slaughter”) involves holding, killing, hide removal, eviscerating, cutting, deboning and/or further processing (e.g., curing, cooking, smoking, canning) of animals (e.g., cattle, swine, sheep, fallow deer, bison) for human consumption.

*Poultry processing* involves the holding, killing, defeathering, eviscerating, cleaning, chilling and packaging of poultry (chickens, ducks, turkeys, pheasants and other domestic fowl or game) for human consumption.

The facilities at which meat or poultry processing occurs are commonly described as abattoirs, slaughterhouses, meat packing plants or poultry processing plants, and include mobile facilities.

The slaughter and poultry processing industries produce liquid, semi-solid and solid wastes – including wastewater, blood, feces, greases, fats, oil, industrial cleaners, feathers, hide, inedible materials, bones and carcasses. These wastes can potentially be disposed of by various methods – including wastewater treatment and discharge, composting, incineration, gasification, land application and/or landfilling. Byproducts from the processing of meat or poultry can also be further processed by a “meat by-product processing” (rendering) facility. This industry is defined and regulated under the WDR separately from the slaughter and poultry processing industries.

Historically, solid wastes have been transported to a meat by-product processing facility and rendered for

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fitness; and to create more jobs per capita than anywhere else in Canada (see [www.bcbudget.gov.bc.ca/2006/sp/env](http://www.bcbudget.gov.bc.ca/2006/sp/env)).

valued by-products, including meat and bone meal and tallow. On-location burial (or other disposal) of slaughter or poultry processing wastes occurred only if a waste generator was far removed from a collection route. Changes to the operation and regulation of the meat by-product processing industry, however, have reduced the number and distribution of such facilities in B.C., leading to increased transport costs and/or reduced access to rendering facilities for many slaughter and poultry processors in the province.<sup>2</sup>

### **3.2 Regulations governing the industries**

Slaughter and poultry processing is regulated under local, provincial and federal government legislation.

Local governments (e.g., municipalities, regional districts) set parameters for the siting and operation of processing facilities through land use planning and zoning.

The provincial government ministries of health and environment have significant responsibilities and powers to regulate the poultry and slaughter industries. The health and sanitation aspects of the industries are regulated under the Ministry of Health *Food Safety Act*<sup>3</sup> and the Meat Inspection Regulation.<sup>4</sup> By September 2007, all facilities that slaughter or kill and sell meat or poultry must be licensed under this provincial regulation. Discharges to the environment from slaughter and poultry processing industries are regulated by the Ministry of Environment.

The federal government plays an important role in governing the industries under health and sanitation regulations, primarily through Health Canada and the Canadian Food Inspection Agency (CFIA).<sup>5</sup> A slaughterhouse or poultry processing facility that intends to sell meat inter-provincially or internationally must also be federally licensed. The role of the CFIA has become more prominent in recent years with the emergence of bovine

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<sup>2</sup> Additional information concerning slaughter and poultry processing in British Columbia can be obtained through the BC Food Processors Association (BCFPA). See, for example: [http://www.bcfpa.ca/guideBook/guide\\_Introduction.html](http://www.bcfpa.ca/guideBook/guide_Introduction.html)

<sup>3</sup> See: [http://www.qp.gov.bc.ca/statreg/stat/F/02028\\_01.htm](http://www.qp.gov.bc.ca/statreg/stat/F/02028_01.htm)

<sup>4</sup> See: [http://www.qp.gov.bc.ca/statreg/reg/F/349\\_2004.htm](http://www.qp.gov.bc.ca/statreg/reg/F/349_2004.htm)

<sup>5</sup> See the Canadian Food Inspection Agency (CFIA) website (<http://www.inspection.gc.ca/>) for further information.

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

spongiform encephalopathy (BSE) and avian flu outbreaks in Canada, as well as in other nations. Federal legislation, for example, requires that anyone who slaughters cattle to ensure that no “specified risk materials” (SRMs)<sup>6</sup> (those parts of the carcass that, in BSE-infected cattle, have been shown to contain prions that transmit the disease) end up in the human food chain.<sup>7</sup> The CFIA controls the collection, treatment, disposal, destruction or alternative use of SRM by way of permits.

### **3.3 Waste discharge authorization requirements for the slaughter and poultry processing industries under the Waste Discharge Regulation**

Historically, the discharge of effluent from slaughter and poultry processing facilities was regulated by a provincial site-specific permitting system. In 2004, the Waste Discharge Regulation (WDR) of the *Environmental Management Act* (EMA) replaced the permitting system with a results-based regulation that was intended to harmonize with Alberta requirements.

The WDR addresses waste discharges from *prescribed industries* (such as the slaughter industry or the poultry processing industry) and *prescribed activities* (such as burning or incineration of waste, composting of waste, landfilling of waste or the discharge of liquid effluents).

The burning or incineration, composting or landfilling of waste generated by any slaughter or poultry processing facility, regardless of amount discharged, currently requires an *authorization* (such as a permit, approval, registration or notification under a regulation or code of practice of the EMA).

Authorization requirements for discharge of liquid effluents from a slaughter or poultry processing facility are currently dependent on the size of the facility. A slaughter facility that processes more

than 1,500 tonnes of red meats per year, or a poultry processing facility that processes more than 130 tonnes live weight of poultry per year, requires an *authorization* for any discharge to the environment (e.g., wastewater discharge from the treatment process). Liquid waste discharges from slaughter or poultry processing facilities producing less than these amounts do not require an authorization under section 6(2) of the EMA, however they “*must not cause pollution.*”

While these values are appropriate for the size of Alberta’s industries, they do not reflect the typical size of a slaughter or poultry processing facility in British Columbia.

## **4. Contents of the Proposed Code**

The ministry, acting in consultation or partnership with the Investment Agriculture Foundation of B.C., commissioned a series of reviews of current environmental regulations governing slaughter and poultry processing industries in Canada, United States and Europe, and technical reports addressing standards and requirements for air emissions, landfills and liquid waste management for poultry processing and slaughter waste.<sup>8</sup>

Proposed intentions for this code of practice are based on review and consideration of these reports and associated consultants’ recommendations.

### **4.1 Scope of the proposed code of practice**

The approach and provisions of the proposed code of practice are based on the following foundations:

- ◆ The provisions of the proposed code of practice are intended to be consistent with technical recommendations, science-based and appropriate to British Columbia’s slaughter and poultry processing industries. The proposed code addresses

<sup>6</sup> SRMs include the skull, brain, trigeminal ganglia (nerves attached to the brain), eyes, tonsils, spinal cord and dorsal root ganglia (nerves attached to the spinal cord), of cattle aged 30 months or older and the distal ileum (portion of the small intestine) of cattle of all ages.

<sup>7</sup> CFIA regulation of meat and poultry products is described at: [www.inspection.gc.ca/english/anima/meavia/meaviae.shtml](http://www.inspection.gc.ca/english/anima/meavia/meaviae.shtml)

<sup>8</sup> Technical reports included: 1) Levelton Consultants Ltd. 2007. *Review of Technical Standards and Requirements for Air Emissions for Poultry Processing and Slaughter Waste*; 2) SENES Consultants Ltd. 2006. *Technical Wastewater Effluent Standards/Requirements for On-Site Wastewater Treatment, Discharge and Beneficial Use From Poultry Processing and Slaughterhouse Operations*; and 3) Sperling Hansen Associates & SYLVIS Environmental. 2006. *Landfill Requirements for Poultry Processing and Slaughter Waste*.

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

the range of potential waste discharges associated with the industries under specified categories. The proposed provisions are intended to balance environmental effects and economic implications, encourage shared stewardship practices and provide alternatives and options for the industries;

- ◆ The provisions and standards of the code of practice will be reviewed for effectiveness in achieving environmental and human health objectives, and practicality, within five years of enactment of the code;
- ◆ The slaughter and poultry processing industries have waste discharges with common issues and requirements for control or mitigation that can be addressed within a single common code of practice (rather than separate industry-specific codes);
- ◆ Current authorization requirements under the WDR (e.g., for discharge of liquid effluents based on the size of a slaughter or poultry processing facility) would be replaced by a common expectation that all facilities licensed to sell meat register their operation with the ministry, and comply with provisions of the code of practice for discharge of waste based on the nature (e.g., air emission, solid waste, wastewater effluent) and amount of discharge (as described in subsequent sections of this intentions paper) – this would require an amendment to the WDR to remove the requirement for authorization based on the size of the operation;
- ◆ Owners or operators of existing facilities that do not hold permits but would be required to register under the proposed code of practice would be provided with a transition period of up to two years to achieve compliance with the code of practice.
- ◆ While landfilling of slaughter and poultry processing wastes would be regulated under this code of practice, it is anticipated that in the future landfilling may be regulated under the Industrial Non-Hazardous Waste Landfill code of practice;
- ◆ Mobile abattoirs would be expected to comply with applicable sections of this code of practice when disposing of wastes generated by their processes;

- ◆ Management and disposal of waste that involves “specified risk materials” (SRMs) (i.e., those parts of a carcass that, in BSE-infected cattle, have been shown to contain prions that transmit the disease) and disposal of poultry or animal carcasses from “mass mortality events” (such as avian flu outbreaks) is considered beyond the scope of the proposed code of practice. Management and disposal of wastes in these situations is regulated under federal legislation and/or the Hazardous Waste Regulation of the EMA, as well as other federal and provincial health and safety regulations; and
- ◆ **Composting** of wastes from slaughter and poultry processing facilities would be governed by the [Organic Matter Recycling Regulation \(OMRR\)](#) and beyond the scope of the proposed code of practice. Poultry carcasses are included in Schedule 12, “Organic Matter Suitable for Composting” of OMRR and it is proposed that red meat waste also be included. Guidance and Best Management Practices (BMPs) will be provided throughout the implementation phase of the code of practice.

## **4.2 Management of liquid wastes (wastewater) discharged by slaughter or poultry processing facilities**

Slaughter and poultry processing involves use of water for cleaning, peeling, cooking, cooling, sanitizing equipment and as a food ingredient. Wastewater from the operations can include blood, feces and other animal materials, greases, fats and oil, suspended solids, pathogens (e.g., *Salmonella*, *Giardia*, *Cryptosporida*), enteric viruses, indicator organisms (e.g. total and fecal coliforms), nutrients (e.g., nitrogen, phosphorus) and pollutants from other materials and processing operations (e.g., byproducts of disinfection agents, pesticides, veterinary drugs).

Discharges of wastewaters with significant quantities of deleterious materials or characteristics can have serious effects on human health and the environment – particularly with respect to aquatic organisms (such as fish) and ecosystems.

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

Wastewaters from slaughter and poultry processing operations commonly contain significantly higher levels of potentially deleterious substances than those of domestic waste (i.e., “sewage”). The following table compares typical domestic wastewater parameters with those from the slaughter and poultry processing industries for: carbonaceous biochemical oxygen demand (CBOD); total suspended solids (TSS); total Kjeldahl nitrogen (TKN); total phosphorus (TP); and fat, oil and grease (FOG).<sup>9</sup>

Table 1: Comparison of Wastewater Characteristics

	Slaughter Facilities <sup>10</sup>	Poultry Processing Facilities	Domestic Sewage <sup>11</sup>
CBOD (mg/L)	7,237	1,662	200
TSS (mg/L)	1,153	760	200
TKN (mg/L)	306	54	30
TP (mg/L)	35	12	6
FOG (mg/L)	146	665	10

The proposed code of practice would set values for the discharge of wastewater from slaughter and poultry processing facilities that are typical of industry standards.

The expectations for wastewater discharge in the proposed code would apply to slaughter and poultry processing facilities that employ a lagoon or manure pit prior to discharge or beneficial reuse.

Direct discharge of treated or untreated wastewaters from slaughter and poultry processing facilities

<sup>9</sup> The term “fat, oil and grease” would mean those components of process waste water amenable to measurement by the method described in “*Methods for Chemical Analysis of Water and Wastes*,” 1971, EPA, Analytical Quality Control Laboratory, p. 217.

<sup>10</sup> Figures for slaughter and poultry processing facilities from: US EPA 2002 – *Development Document for the Proposed Effluent Limitations Guidelines and Standards for the Meat and Poultry Products Industry Point Source Category*. EPA-821-B-01-007, Washington, D.C.

<sup>11</sup> Domestic sewage figures from SENES Consultants Ltd. 2006. *Technical Wastewater Effluent Standards/Requirements for On-Site Wastewater Treatment, Discharge and Beneficial Use from Poultry Processing and Slaughterhouse Operations*.

into a watercourse<sup>12</sup> or groundwater would be prohibited under the proposed code.

The proposed code would not restrict the discharge of wastewater generated by a slaughter or poultry processing facility to a municipal sewage system. Any such discharge would continue to be authorized and regulated by local governments under local by-laws and provisions of the Municipal Sewage Regulation of the EMA and other provincial legislation.

The proposed code would categorize annual production and wastewater discharge and contain a set of fundamental discharge standards (with monitoring and recording expectations) that all slaughter and poultry processing facilities would be expected to meet.

Facilities that exceed “Category A” parameters for either production or wastewater discharge would be expected to meet additional treatment, disposal and monitoring measures (i.e., “Category B” expectations). Specific provisions based on the type of discharge proposed for the wastewater would also be included in the code.

These parameters, thresholds, standards and expectations are summarized in Table 2 and discussed in the following sections of this intentions paper.

## A. Category A facilities

Slaughter facilities processing less than 60 tonnes Live Weight Killed per year (LWK/yr) of red meat (approximately 100 cows) **or** poultry processing facilities processing less than 40 tonnes LWK/yr of poultry (approximately 20,000 birds)<sup>13</sup> – **and** that do not exceed a wastewater flow of 5 m<sup>3</sup>/day at any time would, under the proposed code, be considered Category A facilities and be expected to:

- ◆ Ensure that wastewater discharged by the operation of the facility “does not cause pollution” (under terms of the EMA);

<sup>12</sup> A watercourse would be defined in the proposed code as: “a place that perennially or intermittently contains surface water, including a lake, river, creek, canal, spring, ravine, swamp, salt water marsh or bog, and including a drainage ditch leading into any of the foregoing.”

<sup>13</sup> These figures are based on the following estimates: annual production of 260 operating days/year; 1 cow ≈ 630 kg; and 1 bird ≈ 2.2 kg.

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

- ◆ Maintain daily wastewater flow monitoring and records for any period in which there is a discharge; and
- ◆ Maintain records of annual production volumes.

## **B. Category B facilities**

Under the proposed code, slaughter facilities processing 60 tonnes or more Live Weight Killed per year (LWK/yr) of red meat (approximately 100 cows), **or** poultry processing facilities processing 40 tonnes LWK/yr or more (approximately 20,000 birds) would be considered Category B facilities. Any facility with a wastewater flow of 5 or more m<sup>3</sup>/day at any time (regardless of annual production) would be considered a Category B discharge facility.

As well as complying with expectations set out for Category A facilities, Category B facilities would be expected to identify the ground discharge method(s) proposed or in use for the management of wastewater discharges – and to ensure that all associated requirements are met. Acceptable discharge methods under the proposed code would be: i) disposal by sub-surface application (drain/tile field); or ii) beneficial re-use by irrigation. Standards and expectations specific to each of these methods are discussed in the following sections of this intentions paper.

### **i) Subsurface application (drain/tile field) of treated wastewater**

The proposed code of practice would focus on aspects considered to be essential to the effective functioning of tile fields: wastewater characteristics (measured by FOG, CBOD and TSS); and subsurface travel time.<sup>14</sup>

Operators of slaughter and poultry processing facilities would, under the proposed code, be expected to monitor and treat all wastewater that is discharged to a drain/tile field and ensure that the wastewater does not at any time exceed:

- ◆ 10 mg/L FOG;

<sup>14</sup> The actual time required for effluent to travel from the point of release to the ground, to the point where the effluent surfaces, reaches a property line or is intercepted by a water well.

- ◆ 130 mg/L CBOD; and
- ◆ 130 mg/L TSS.

Subsurface travel time (as calculated by a qualified professional<sup>15</sup> acting within their professional capacity) for discharged wastewater would not be less than ten days.

Monitoring and recording of FOG, CBOD and TSS would be expected on a quarterly basis.

Note that permitted wastewater treatment works in use by slaughter or poultry processing facilities prior to enactment of the proposed code of practice would not be required to meet the proposed subsurface travel time requirement. However, all facilities would be expected to meet the regulatory terms set out in applicable authorizations, and to “not cause pollution” under the EMA.

### **ii) Beneficial re-use of treated wastewater by irrigation**

The proposed code of practice would consider irrigation of treated wastewater generated from slaughter or poultry processing facilities to be a beneficial use and acceptable when:

- ◆ Treated wastewater applied to land does not exceed 10 mg/L of FOG; 45 mg/L CBOD, and 60 mg/L TSS;
- ◆ Total coliform organisms do not exceed 1,000 /100 mL and total fecal organisms do not exceed 200 /100 mL;
- ◆ Treated wastewater is not used on agricultural crops intended for human consumption;
- ◆ A nutrient management plan for the beneficial re-use of treated wastewater by irrigation, assessing and setting out actions for the protection of hu-

<sup>15</sup> In the proposed code a “qualified professional” would be defined as an applied scientist or technologist specializing in a particular applied science or technology including, but not necessarily limited to, agrology, biology, chemistry, engineering, geology, or hydrogeology and (a) who is registered in British Columbia with their appropriate professional organization, acting under that association’s Code of Ethics and subject to disciplinary action by that association, and (b) who, through suitable education, experience, accreditation and knowledge, may be reasonably relied on to provide advice within their area of expertise.

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

man health and the environment, is prepared by a qualified professional and available to the ministry within two working days of a request – the nutrient management plan would be expected to identify the intended public access, as well as address (but not be limited to) crop nutrient uptake and removal, irrigation requirements, buffer distances, aerosol drift, disinfection, soil considerations, runoff, land use of proposed application

site(s) and any other measures required to ensure protection of human health and the environment; and

- ◆ All parameters are monitored and documented before the initial discharge and at least bi-weekly (every two weeks) during the discharge period.

Table 2: Summary of Standards and Expectations for Treatment, Disposal, Beneficial Reuse and Monitoring of Wastewater Generated by a Slaughter or Poultry Processing Facility

Expectations based on production and wastewater discharge parameters:	
A.	<p><i>Category A:</i> slaughter facilities processing less than 60 tonnes LWK/yr of red meat <i>OR</i> poultry processing facilities processing less than 40 tonnes LWK/yr of poultry; <i>AND</i> facilities that do not exceed a wastewater flow of 5 m<sup>3</sup>/day at any time.</p> <p><i>Basic expectations:</i></p> <ul style="list-style-type: none"> <li>◆ Ensure that wastewater discharged by the operation of the facility “does not cause pollution” (under terms of the EMA)</li> <li>◆ Maintain daily wastewater flow monitoring and records for any period in which there is a discharge</li> <li>◆ Maintain records of annual production volumes</li> </ul>
B.	<p><i>Category B:</i> Slaughter facilities processing 60 tonnes or more LWK/yr of red meat <i>OR</i> poultry processing facilities processing 40 tonnes or more LWK/yr of poultry; <i>OR</i> facilities with a wastewater flow of 5 or more m<sup>3</sup>/day at any time.</p> <p><i>Basic expectations and:</i></p> <ul style="list-style-type: none"> <li>◆ Identify method of ground discharge – subsurface application <i>OR</i> beneficial reuse of treated wastewater by irrigation – <i>AND</i> follow standards and expectations specific to the identified method, as set out in the code</li> </ul> <p><i>i: Subsurface application (drain/tile field) of treated wastewater:</i></p> <ul style="list-style-type: none"> <li>◆ Treated wastewater that is discharged to a drain/tile field would not at any time exceed: 10 mg/L total fat, oil and grease (FOG); 130 mg/L carbonaceous biochemical oxygen demand (CBOD); and 130 mg/L total suspended solids (TSS)</li> <li>◆ Subsurface travel time (as calculated by a qualified professional) for discharged wastewater of not less than ten days</li> <li>◆ Quarterly monitoring and recording of FOG, CBOD and TSS</li> </ul> <p><i>ii: Beneficial reuse of treated wastewater by irrigation:</i></p> <ul style="list-style-type: none"> <li>◆ Treated wastewater applied to land would not exceed: 10 mg/L FOG; 45 mg/L CBOD; and 60 mg/L TSS</li> <li>◆ Total coliform organisms would not exceed 1,000 /100 mL and total fecal coliform organisms would not exceed 200 /100 mL</li> <li>◆ A nutrient management plan for the irrigation of treated wastewater prepared by a qualified professional</li> <li>◆ Monitoring and recording of all parameters before initial discharge and every two weeks during the discharge period</li> </ul>

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

## 4.3 Proposed provisions for landfilling of wastes generated by a slaughter or poultry processing facility

The slaughter and processing of livestock or poultry can generate significant volumes of solid and semi-solid waste. The following table, drawn from reports commissioned by or in partnership with the ministry, provides an indication of the amount of waste generated by animal type.

Table 3: Average Live Weight and Weight of Solid Wastes Generated from Slaughter of Livestock and Poultry

Livestock species	Average live weight (kg)	SRM <sup>16</sup> waste (kg)	Total waste per animal (kg)
Cattle (under 30 months)	630	13	318
Cattle (over 30 months)	604	40	357
Bison	410	-	210
Pork	100	-	45
Sheep/lambs	55	-	22
Broiler Chicken	1.95	-	0.51

The impacts of leachate on groundwater and surrounding terrestrial and aquatic ecosystems are a key consideration in the disposal of slaughter and poultry processing waste. The volume and character of leachate generated from a landfill is principally dependent on climate (most notably, rainfall), the surface area of landfill cells (burial trenches), the type of cover over the waste and the type of waste involved (moisture content).

The landfilling provisions in the proposed code of practice would apply only to “dedicated” landfilling of slaughter and poultry processing waste. Mixed or co-mingled waste (waste that includes slaughter and/or poultry processing materials mixed with refuse) or waste intended for disposal in a municipal solid waste landfill would continue to be regulated

<sup>16</sup> Specified Risk Materials (as defined by the CFIA) – see section 3.2 of this intentions paper for additional information.

under the EMA and is outside the scope of the proposed code.

Provisions in the proposed code would be based on:

- ◆ *Mandatory technical provisions for any landfilling;*
- ◆ *Additional technical provisions for landfilling greater than 5,000 kg/Ha/yr; and*
- ◆ *Additional technical provisions for any landfilling in areas with precipitation greater than 600 mm/yr.<sup>17</sup>*

These provisions are discussed in more detail in the following sections of this intentions paper.

### A. Provisions for any proposed landfilling of slaughter or poultry processing wastes

Under the proposed code of practice, the operator or owner of a facility would document information concerning any proposed landfilling (burial) of slaughter or poultry processing wastes by submitting a completed registration form (see section 4.7 of this intentions paper). Any management or other plans or assessments would have to be prepared and documented according to the terms set out in the proposed code and made available to the ministry within two working days of a request.

Any landfilling of slaughter or poultry processing wastes would be expected to address the following proposed technical provisions:

- ◆ *Siting* – burial sites would be relatively flat with a slope of less than 0.5%, burial sites would not be located within areas with shallow bedrock depths or in localized low spots, and a burial trench should never be reused;
- ◆ *Buffer distances* – a trench would not be located within the 200 year floodplain and there should be a minimum distance between the trench and the property line of 50 m, other facilities<sup>18</sup> of

<sup>17</sup> 600 mm/yr applies to: a) On Vancouver Island, b) in the Greater Vancouver Regional District, c) in the Fraser Valley Regional District, and d) in any other area of BC for which the sum of the average precipitation for the months of October to March inclusive exceeds 600 mm.

<sup>18</sup> Other facilities would be defined as the nearest residence, water supply well, water supply intake, hotel, restaurant, food processing facility, school, church or public park.

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

300 m, the nearest surface water of 100 m, and an unstable area (such as ravine, steep bank or cliff) of 100 m;

- ◆ *Protection of groundwater* – trenches would be spaced a minimum of 30 m apart and a minimum of 4 m between the seasonal high water table and the bottommost waste cell;
- ◆ *Vector/pest/wildlife* – a plan for reducing vector/pest/wildlife attraction would be submitted with registration information – at least 45 days prior to intended use;
- ◆ *Operational procedures* – i) any disposal trench would be dug to 1 m to 2 m below native ground level and to a maximum of 2 m wide, ii) waste deposited in trenches should be immediately covered with at least 0.15 m of low permeability silt or clay, and iii) an impermeable cover would be placed over the top of the trench to prevent precipitation from entering the trench;
- ◆ *Documentation* – landfill activities would be recorded and include dates of disposal, location of the disposal trenches, and waste type and quantity by mass during periods of discharge; and
- ◆ *Landfill closure* – use of a closure system consisting of a minimum of 1 m thick low permeability soil with hydraulic conductivity of  $1 \times 10^{-5}$  cm/s or less (i.e., silt or clay), extending at least 0.3 m above native ground level (to allow for settlement of the waste), and extending at least 0.5 m beyond the trench edges at full thickness, with feathering to a slope of 20% or flatter.

## **B. Additional provisions for proposed landfilling of slaughter or poultry processing wastes in areas with precipitation greater than 600 mm/yr**

In areas with precipitation greater than 600 mm/yr, preparation of a groundwater protection and monitoring assessment by a qualified professional would be expected prior to any proposed landfilling of slaughter or poultry processing wastes. This would apply to all landfills under the proposed code, regardless of size.

## **C. Additional provisions for proposed landfilling greater than 5,000 kg/Ha/yr of slaughter or poultry processing wastes**

A qualified professional<sup>14</sup> would be required to review proposed and/or potential siting of the landfill in order to determine groundwater protection and monitoring requirements. The review would address (but not be limited to) assessing the location of domestic water sources, depth to groundwater, groundwater flow regime, soil types, hydraulic conductivity and potential impacts of groundwater contamination. The requirement for a groundwater monitoring plan would be determined on the basis of the qualified professional's assessment.

Proposed landfills with greater than 5,000 kg/Ha/yr<sup>19</sup> of slaughter or poultry processing waste would also be expected to meet or address:

- ◆ *Additional operational procedures* – minimum 5 m thick layer of low permeability soil with hydraulic conductivity of  $1 \times 10^{-6}$  cm/s or less (silt or clay) below each waste trench;
- ◆ *Groundwater monitoring* – assessment and plan based on recommendations from a qualified professional and submitted to a director; and
- ◆ *Closure plan* – based on recommendations from a qualified professional and submitted to a director.

## **4.4 Incineration of wastes – air emissions**

The proposed code of practice would include provisions for incineration of slaughter or poultry processing waste – provided that identified air emission standards, operating procedures and monitoring and reporting requirements are met.

Air emissions in most of B.C. are regulated by the Ministry of Environment. The Greater Vancouver Regional District (GVRD) also has authority to manage air emissions within their jurisdiction under section 31 of the EMA. As such, air emissions from slaughter and poultry establishments located

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<sup>19</sup> This amount (5,000kg) of waste would be generated by the slaughter and processing of about 15 cattle, 25 bison, 110 hogs, 225 sheep or 9,800 chickens.

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

within the GVRD may be subject to additional specified limits and rules.

Some incineration facilities in B.C. are authorized to incinerate animal carcasses, however no facility is currently authorized exclusively for the incineration of slaughter or poultry processing wastes.

## Air Quality Issues and Industrial Incineration

Air quality concerns in British Columbia include: exposure to particulate matter (and/or ozone) at concentrations that could lead to detrimental human health and ecosystem effects; greenhouse gases (and their associated contribution to global climate change); impairment of visibility; and odorous emissions. Fine particulates (particulate matter) are presently considered the type of air pollution of most concern in BC.

The most significant risks to air quality posed by industrial incineration are associated with the emission of fine particulates and in particular, "inhalable" particulates less than 10µm in diameter and "respirable" particulates less than 2.5µm in diameter (by comparison, the average human hair is about 70 µm in diameter).

One of the province's primary mechanisms for addressing air quality management issues involves "airshed planning" – intended to provide a multi-stakeholder process for coordinating activities in an airshed – to identify and meet community supported air quality goals. The ministry has committed to a target of achieving or maintaining Canada Wide Standards (CWS) for PM2.5 (particulate matter less than 2.5µm in diameter) and ozone in all monitored communities in BC by 2010. To achieve this target, new establishments may be required to meet more stringent specified air emission requirements, based on: 1) specific air quality concerns within an airshed where an airshed management plan is being developed or implemented; or 2) whether the location is within an airshed falling under the "keeping clean areas clean" commitment in the Canada Wide Standards.

See the ministry's Water, Air Climate Change Branch website for additional information regarding air quality issues: [www.env.gov.bc.ca/air/airquality/#modguidelines](http://www.env.gov.bc.ca/air/airquality/#modguidelines)

## A. Applicability of emission limits

Emission limits within the proposed code would apply to incinerators of slaughter or poultry waste that are either:

- ◆ Continuous feed, for loadings up to 400 kg per hour; or
- ◆ Batch feed, for loadings up to 400 kg per individual load.

Incinerators that handle higher quantities of waste would require a permit under the EMA.

## B. Emission standards

Under the proposed code, air emissions would be measured in terms of the weight of particulate matter in a given volume of air (e.g., mg/m<sup>3</sup>) at standard conditions and by "opacity."<sup>20</sup> The proposed emission standards authorized by the code are summarized in Table 4.

Table 4: Proposed Air Emission Limits

Parameter	Proposed Air Emission Limit
Total Particulate <sup>21</sup>	50 mg/m <sup>3</sup>
Opacity	10% averaged over 6 consecutive minutes

## C. Operating requirements

The proposed code would require that incineration equipment be installed, operated and maintained in accordance with manufacturers' specifications, requirements and recommended procedures.

The code would also include the following proposed incineration requirements:

- ◆ The waste stream for the incinerator would be dedicated to animal by-products only;
- ◆ The incinerator would not be loaded at higher than design limitations; and
- ◆ Waste loading into the incinerator would be weighed.

## D. Siting requirements

The proposed code would include provisions that any incinerator be located at least 1 kilometer from any existing inhabited residence and 5 kilometers from an existing business, school in session, hospital or continuing care facility.

<sup>20</sup> Opacity is the amount of light that is blocked by a medium, like smoke or a tinted window (usually stated as a percentage – an opacity of 0% indicates that all light passes through the medium, while an opacity of 100% means that no light can pass through). Field opacity measurements can be taken either by a trained observer or using instrumentation.

<sup>21</sup> Particulate concentration corrected to 11% O<sub>2</sub> at reference conditions of dry gas at 25°C and 101.3kPa. These emission limits would not apply for the first 30 minutes of combustion unit start-up where an allowance of up to 40% opacity would be authorized.

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

## **E. Monitoring and recording requirements**

The ministry is seeking comment on three avenues for ensuring that emission limits are met. Note that they are not mutually exclusive (i.e., the code of practice may include some or all elements of each of the three avenues). The alternatives for ensuring that air emissions within limits are:

- ◆ *For equipment that would not have a performance track record* – Stack testing of the incinerator in operation within the first day of operation and periodically thereafter (on an annual basis initially, and biannually when performance is assured);
- ◆ *For equipment that has been used elsewhere and has some emission and performance test data* – An assessment report, signed by a qualified professional (available to the ministry within two working days of a request), stating that design and installation of the incineration equipment, and operation within manufacturers' recommendations would enable operation within the limits within this code; and/or
- ◆ *For equipment that has been used extensively elsewhere and has substantial performance and emission test data* – Documentation from the manufacturer to indicate that the incineration equipment would meet ministry standards for air emissions (available to the ministry within two working days of a request).

Additional stack testing may also be requested of a facility owner or operator by a director.

## **F. Proposed incineration in areas with airshed management plans or other air quality management processes**

The challenge of dealing with the cumulative impacts of air emissions on an airshed-specific basis is of concern to the ministry. Under the EMA and WDR, the director can issue a substitution to specify more stringent emission limits for establishments located within airsheds where the local air quality exceeds:

- ◆ The Canada Wide Standard (CWS) for fine particulate matter or ozone;
- ◆ Provincial ambient objectives for air contaminants; and/or
- ◆ Specific airshed management plan requirements.

The Ministry is seeking comments and suggestions for dealing with the cumulative impacts of air emissions from poultry and slaughter processing facilities on an airshed-specific basis (see response form that accompanies this intentions paper).

Note that although annual emission release estimates (or other provisions) for airshed management or planning purposes would not be specified under the proposed code, they may be required of a facility owner or operator by a director.

## **4.5 Management of odours and fugitive dust**

Owners and operators of all slaughter and poultry processing facilities will be expected under the proposed code of practice to satisfactorily manage fugitive dust and odour emissions – in a manner that “does not cause pollution” under the EMA.

Inadequate control of fugitive dust and/or odour emissions could trigger a requirement for a qualified professional to prepare a fugitive dust or odour management plan that sets out appropriate measures to ensure protection of the environment and human health (including the prevention of nuisance to neighbours). Measures set out in management plans could include: installation of suitable control devices; training and operating procedures to minimize the generation of fugitive dust and odours; and monitoring and public complaint response plans.

## **4.6. Summary of monitoring and recording expectations**

Facility operators would be expected to:

- ◆ Maintain the results of any sampling conducted for a minimum of ten years;
- ◆ Report any sampling results at the request of a director within two working days of the request; and
- ◆ Immediately report and take corrective action in the event of any non-compliance.

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

The proposed code would also include direction that sampling and analysis be carried out in accordance with procedures set out in the most recent applicable provincial field sampling manual (See: [www.env.gov.bc.ca/air/wamr/labsys/field\\_man\\_03.html](http://www.env.gov.bc.ca/air/wamr/labsys/field_man_03.html)).

Proposed monitoring and recording expectations (and associated discharge criteria) are summarized in the table below.

Table 5: Summary of Proposed Monitoring and Recording Expectations

Type of Facility or Activity	Monitoring and Recording Expectations (and associated discharge criteria)
All facilities	<ul style="list-style-type: none"> <li>◆ Maintain daily wastewater flow monitoring and records for any period in which there is a discharge</li> <li>◆ Maintain records of annual production volumes</li> </ul>
Category B facilities: <ul style="list-style-type: none"> <li>◆ Slaughter facilities processing 60 tonnes or more LWK/yr of red meat, or poultry processing facilities processing 40 tonnes or more LWK/yr of poultry</li> <li>◆ Facilities with a wastewater flow of 5 or more m<sup>3</sup>/day at any time</li> </ul>	<ul style="list-style-type: none"> <li>◆ Identify ground discharge method(s) proposed or in use for the management of wastewater</li> </ul>
Facilities intending to dispose of treated wastewater by subsurface application (drain/tile field)	<ul style="list-style-type: none"> <li>◆ Monitor and record of FOG, CBOD and TSS quarterly to ensure that treated wastewater that is discharged to a drain/tile field would not at any time exceed: 10 mg/L FOG; 130 mg/L CBOD; and 130 mg/L TSS</li> <li>◆ Ensure subsurface travel time (as calculated by a qualified professional) for discharged wastewater of not less than ten days</li> </ul>
Facilities intending to beneficially reuse treated wastewater by irrigation	<ul style="list-style-type: none"> <li>◆ Complete a nutrient management plan (prepared by a qualified professional) for the irrigation of treated wastewater</li> <li>◆ Monitor and record of all parameters before initial discharge and every two weeks during the discharge period, to ensure that:               <ul style="list-style-type: none"> <li>▪ Treated wastewater applied to land would not exceed: 10 mg/L FOG; 45 mg/L CBOD; and 60 mg/L TSS; and</li> <li>▪ Total coliform organisms would not exceed 1,000/100 mL and total fecal coliform organisms would not exceed 200/100 mL</li> </ul> </li> </ul>
Proposed landfilling of slaughter or poultry processing wastes	<ul style="list-style-type: none"> <li>◆ Record landfill activities including dates of disposal, location of the disposal trenches, and waste type and quantity by mass during periods of discharge</li> </ul>
Proposed landfilling in areas with precipitation greater than 600 mm/yr <i>or</i> of greater than 5,000 kg/Ha/yr of slaughter or poultry processing wastes	<ul style="list-style-type: none"> <li>◆ Monitor groundwater – based on recommendations from a qualified professional and have available to the ministry on request</li> </ul>
Proposed incineration of wastes from slaughter or poultry processing facilities	<ul style="list-style-type: none"> <li>◆ <i>For equipment that would not have a performance track record</i> – Stack testing of the incinerator in operation within the first day of operation and on a periodic basis thereafter (on an annual basis initially, and biannually when performance is assured)</li> <li>◆ Additional stack testing may be also requested of a facility owner or operator by a director</li> </ul>

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

## **4.7 Registration of slaughter and poultry processing facilities**

### **A. Proposed provisions for registration**

Under the proposed code of practice, all slaughter and poultry processing facilities licensed to sell meat would register the facility with the Ministry of Environment.

Existing permitted facilities would register under the code when requiring a major amendment or may cancel their permit and voluntarily register under the code.

The owner or operator of a slaughter and/or poultry processing facility would submit a registration as per Section 4 of the Waste Discharge Regulation. The owner or operator would notify a director within 30 days of any changes to information contained in the registration.

Registration information proposed under the code would also include:

- ◆ Known or anticipated annual production of red meat and/or poultry products from the facility (tonnes LWK/yr);
- ◆ Known or anticipated maximum daily wastewater flow from the facility (m<sup>3</sup>/day);
- ◆ Known or anticipated type of discharge (sub-surface, irrigation, landfill, air emissions); and
- ◆ Acknowledgement that any applicable management or other plans or assessments required under provisions of the proposed code of practice – e.g., fugitive dust, odours, subsurface travel time, nutrient management (for irrigation of liquid waste) and other identified activities of facility operations (such as landfilling) – have been undertaken, documented and can be made available to the ministry within two working days of request.

### **B. Annual fees**

Provisions for annual fees for the proposed code of practice are set out in Section 9 of the Waste Discharge Regulation.

The ministry is supportive of efforts to reduce contaminant levels associated with slaughter and poultry processing facilities and is interested in comments regarding appropriate incentives (under the proposed code or by other regulatory means) to encourage the reduction of contaminant loading.

## **4.8 Consultation with First Nations**

Information concerning consultation with First Nations with respect to the proposed slaughter and poultry processing industries code of practice will be developed in accordance with legal requirements, ministry policy and government direction.

## **5. Best Management Practices**

The code of practice will be supported by guidelines and/or “best management practices” (BMPs) that provide information regarding how slaughter and poultry processing facilities can meet ministry goals for protection of human health and the environment and operate in a manner that is consistent with the *Environmental Management Act*, regulations and codes of practice. These practices and procedures could be based on existing BMPs developed by the industries and/or developed jointly with government and would not have the force of law. Guidelines or BMPs may be viewed as assistance to persons governed by a regulation in meeting their legal obligations.

## **6. Assuring Compliance**

### **6.1 Compliance promotion**

The ministry will develop a strategy for the promotion of voluntary compliance with the requirements of this code of practice, in cooperation with industry associations and other interests. Compliance promotion may entail training for ministry staff, as well as information and education for those operating slaughter and/or poultry processing facilities.

### **6.2 Compliance verification**

The ministry’s approach to assuring compliance with the slaughter and poultry processing industries code of practice will include regular and random compliance reviews and inspections, as well as

# **Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation**

reviews and inspections in response to identified or potential issues or concerns regarding protection of the environment or human health.

The ministry is committed to using compliance verification data to guide the ongoing management of slaughter and poultry processing facilities and assure the goals for environmental protection are being met.

## **6.3 Enforcement**

The ministry response to non-compliance will entail written advisories, warnings, directives, tickets and prosecutions. The choice of response will be based on ministry-wide policy, the compliance history for the slaughter and/or poultry processing facility and the significance of the impact from the non-compliance occurrence.

## **7. Providing Comment on Proposed Intentions for the Code of Practice**

The ministry is intending to finalize the Slaughter and Poultry Processing Industries Code of Practice by the end of June 2007. Comments regarding the proposed intentions of the ministry are being solicited and will be carefully considered in the review and development process. The ministry welcomes all suggestions with respect to any aspect of the code of practice.

Submissions will be compiled and summarized, without specific attribution, by an independent contractor and the summary posted on the ministry website. Following review of comments and submissions, the ministry will complete legal drafting of the code of practice for legislative review and implementation.

This intentions paper and a response form with questions based on proposed intentions for the code of practice have been posted on the ministry's web site: [www.env.gov.bc.ca/epdiv/ema\\_codes\\_of\\_practice/index](http://www.env.gov.bc.ca/epdiv/ema_codes_of_practice/index).

Those interested are invited to submit comments using the instructions and questions provided on the response form. Individuals or organizations may also make written submissions to the ministry without following the format set out in the response form – as desired.

**Comments to the ministry should be made on or before June 16, 2007, however, the ministry would appreciate receiving comments for this intentions paper by May 31, 2007.**

All submissions will be reviewed for inclusion in a consultation summary report. Comments received will be treated with confidentiality by ministry staff and contractors when preparing consultation reports. Please note that comments you provide and information that identifies you as the source of those comments may be publicly available if a Freedom of Information (FOI) request is made under the *Freedom of Information and Protection of Privacy Act*.

If you have any questions or comments regarding the consultation process, review the information posted on the ministry website, or contact Cindy Bertram of C. Rankin & Associates, who has been contracted to manage consultation comments, at:

**Email:** [cindybertram@shaw.ca](mailto:cindybertram@shaw.ca)

**Mail:** PO Box 5293  
Victoria, B.C. V8R 6N4

**Fax:** (250) 598-9948

*Thank you for your time and comments!*

# Slaughter and Poultry Processing Industries Policy Intentions Paper for Consultation

## Acronyms and abbreviations used in this document

Acronym	Definition
B.C.	British Columbia
BCFPA	British Columbia Food Processors Association
BMPs	Best management practices
BSE	Bovine spongiform encephalopathy
CBOD	Carbonaceous biochemical oxygen demand
CFIA	Canadian Food Inspection Agency
cm/s	Centimeter per second
CO <sub>2</sub>	Carbon dioxide
CWS	Canada Wide Standards (for air quality)
EMA	<i>Environmental Management Act</i>
FOG	Fat, oil and grease
GVRD	Greater Vancouver Regional District
Ha	Hectare (area)
kg/hr	Kilograms per hour
kPa	Kilopascal (unit of pressure) = one newton per square metre
LWK/yr	Live weight killed per year
m	meter
m <sup>3</sup>	Cubic meters
mg/L	Milligrams per liter
mg/m <sup>3</sup>	Milligrams per cubic meter
mL	Milliliter
mm	Millimeter
O <sub>2</sub>	Oxygen
PM	Particulate matter
SRMs	Specified Risk Materials
TSS	Total suspended solids
TKN	Total Kjeldahl nitrogen
TP	Total phosphorus
µm	Micrometer (or micron) = 1 × 10 <sup>-6</sup> meter
WDR	Waste Discharge Regulation