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**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION
MEETING OF THURSDAY 21 APRIL 2011**

SUBJECT LAND APPLICATION OF CLASS A BIOSOLIDS – LITERATURE REVIEW

ISSUE

Land application of biosolids has several benefits, but there are potential risks to human health and the environment. Both the Saanich Peninsula Wastewater Commission and the Environmental Sustainability Committee have directed staff to provide additional information regarding these potential concerns in order to support decisions and policies for biosolids management.

BACKGROUND

Biosolids are generated through wastewater treatment processes. One of the potential uses of this product is its application to land, with a primary benefit of providing nutrients to agricultural, landscaped or reclaimed land, displacing the need for synthetic or non-sustainably sourced fertilizers.

In Canada, approximately 660,000 tons of biosolids are produced annually with approximately 43% applied to agricultural land, 4% to landfill and 47% to various types of land applications. The United States generates more than 7 million tons of biosolids per year, with approximately 51% going onto agricultural land, 38% to landfill and 11% to incineration. Countries in the European Union generate more than 6 million tons of biosolids per year. The percentage of biosolids being applied on land in Europe varies from country to country, e.g., Germany 25%, Netherlands 44%.

As with any product, there are potential risks associated with its use. Human health and environmental concerns about biosolids land application arise because of the potential for direct or indirect exposure to pathogens or contaminants contained in the land applied biosolids. Risk assessment evaluates the source, pathways and receptors that can lead to contaminant exposure. To provide a full and timely response to the committees' requests, the Capital Regional District (CRD) retained the services of Stantec Consulting Ltd. to undertake a literature review on the risks of the land application of biosolids. Stantec's report is attached as Appendix A, and a brief summary is provided below.

Potential contaminant exposure risks are primarily associated with metals and, as such, the various international regulations include the metal concentration limits. These limits have been set conservatively to reduce the risks for direct and indirect toxicity to human health and the environment. Many of the supporting risk assessments have also investigated the potential for adverse effects of micro-constituent contaminants, such as industrial organic chemicals (e.g., fertilizers and pesticides, flame retardants, etc.) pharmaceuticals and personal care products, and other emerging substances of concern. These peer-reviewed scientific risk assessments have determined that many of the industrial organic chemicals are indeed present in the biosolids, but that concentrations are well below those demonstrated to have human health or ecological effects. With respect to pharmaceuticals, personal care products and other substances of concern, the ability to analyze and detect these compounds currently supersedes the ability to fully interpret any potential effects. However, the detection of these chemicals does not imply unacceptable risks or potential effects. Current research about their potential environmental effects is limited; however, preliminary and ongoing research indicates that the risk of adverse effects is low. As a result, regulatory agencies are not developing revisions to the current frameworks that permit land application of biosolids.

The general consensus of scientific studies and risk assessments have also concluded that potential pathogen exposure risks, such as those that have been publicized in the media, are primarily associated with the land application of sewage sludges (i.e., untreated wastewater residuals with no pathogen reduction) or the application of Class A or Class B biosolids in ways that are not in accordance with the regulations.

Given the scientific research conducted to date, regulatory bodies have developed risk management approaches that allow for the land application of biosolids, which includes legislation, guidance documents, policies and procedures and administrative requirements. For example, in BC, biosolids land application is regulated through the BC Organic Mater Recycling Regulation (OMRR). This regulation sets:

- allowable limits for pathogens and contaminants (specifically metals) in the biosolids;
- allowable limits for these same parameters in the agricultural soils post-land application; and
- direction for site specific conditions that must be considered prior to, and during land application.

The OMRR, consistent with other regulatory frameworks in Canada, the US and Europe, is based on peer-reviewed, scientific risk assessments that have involved investigating all potential sources, pathways (as outlined in Table 1 of the Stantec report), receptors and effects associated with the land application of biosolids, and then undertaking an overall risk/benefit analysis.

In conclusion, the BC provincial government, along with other jurisdictions with statutory responsibility for protecting human health and the environment, have considered the risks of biosolids application to land, and provided enabling legislation and technical and administrative guidance to ensure that the proper application of biosolids poses acceptable risk to human health and the environment.

Monitoring of the Saanich Peninsula treatment plant's PenGrow biosolids product confirms that it meets all Class A pathogen and metal limit criteria required by OMRR and, as such, the product can be applied to land with approved land application plans that result in acceptable risk levels for human health and the environment.

ALTERNATIVES

That the Saanich Peninsula Wastewater Commission:

1. receive this report for information; or
2. not receive this report for information and direct staff to provide additional information.

CONCLUSION

The production of biosolids from the Saanich Peninsula wastewater treatment plant meets Class A standards under the OMRR. The proper application of these biosolids to land would result in acceptable risk to human health and the environment as defined by the protections standards set by the BC Ministry of Environment, which are consistent with other national and international regulatory bodies. These conclusions allow for a range of risk management options to the CRD besides land application, and include landfilling, incineration, and a feedstock for other industrial processes.

RECOMMENDATION

That the Saanich Peninsula Wastewater Commission receive this report for information.

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