

CELGAR SLUDGE INFORMATION

INTRODUCTION

Celgar's effluent treatment system produces a residual material more commonly referred to as sludge. It is an approximate 50/50 mixture of fibre/lime and biosolids. The combined dewatered material is non toxic and has low metal and chlorinated organic material content. The residual has been tested for beneficial reuse as a soil amendment with great success.

Celgar used three guidelines in order to assess the quality of the sludge and compost:

1. Guidelines for the Disposal of Domestic Sludge Under the Waste Management Act (Draft), 1983 (Municipal Biosolids guideline)
2. Production and Use of Compost Regulation, BC Ministry of Environment, BC Regulation 334/93 (Compost regulation)
3. Criteria for Managing Contaminated Sites in BC (CMCS), BC Environment, July 1995.

The first two guidelines assess the quality of the sludge. Celgar's sludge was analysed for a suite of metals, and with the exception of cadmium, all metals were lower than the Code 1 limits required for Type A compost. Type A compost has unrestricted use. Due to the slightly elevated cadmium content, Celgar's sludge falls in the Type B compost which means it cannot be used for food production. However, all metals found in the sludge are significantly lower than those found in municipal biosolid residue. Thorough composite samples of sludge showed that the only other metal which was slightly elevated above the most stringent of guidelines was boron. The bioavailability of boron is affected by the acidity of the soil. Celgar sludge is in the neutral to alkaline range, therefore, it is not likely that boron will cause any adverse impact.

In early 1995, dioxin and furan tests were carried out on Celgar's sludge. The results indicated that there was only a TCDD-TEQ of 0.4 ppt (parts per trillion). This number is well under the level of concern. The CMCS criteria for Agricultural soils limits TCDD-TEQ to 10 ppt.

Several trials were carried out in the summer of 1995 to monitor the effectiveness of Celgar's effluent treatment sludge as a soil amendment. It was concluded that the sludge displayed favourable properties for land-based beneficial reuse options. The sludge provided good soil conditions for revegetation of a difficult site and it proved to be an excellent compost substrate.

INSTRUCTIONS FOR SLUDGE APPLICATIONS

How to Obtain Celgar Compost:

Public use of less than 10 tonnes of compost is allowed without an application for a deposit permit as per the BC Environment. Requests should be made to Fiona Mackay at 365-4249 or 365-7211 or by fax 365-4214 stating the quantity required, the location (house address of site) and the desired land end use. Members of the public may proceed to arrange for collection of the sludge from the foreshore area once they have notified security. Records are kept as per the BC Environment's mandate of where and how much sludge has been applied. Removal of compost from the foreshore without the permission of Celgar is prohibited. All members of the public must be aware that Celgar does not assume any responsibility for the improper use of this sludge. A set of analysis for dioxins/furans, metals and nutrients is available upon request.

Land Application for Revegetation

Prepare the plot of land by first scarifying to an approximate depth of 15 cm. This will allow for good mixing of the sludge into the existing soils. The sludge should be applied at a 10 to 15 cm depth. Till the material until the sludge has incorporated into the original surface soils.

Sludge will be slick. It may be necessary to wait a day until the sludge application has dried before tilling. Seed with the desired grass mixture. The moisture content of the sludge will allow the area to go without watering for greater periods of time, however, irrigation may be necessary until the seeds have germinated.

In large applications of sludge, in excess of 10 dry tonnes (one large commercial dump truck), approval by the BC Ministry of Environment must be sought prior to deposit. In cases such as these, a map drawn to scale, soil samples, desired end use of land and proximities to water ways must be clearly outlined and submitted. Applications of sludge cannot proceed without advanced authorization for deposit in the form of an Approval. There is a nominal fee required by the BC Environment for application processing. F. Mackay will assist any interested parties in applying for their approvals.

Compost Application to Home Gardens

The Celgar sludge is classified as a Type B compost which means it is limited in use to non-food consumption crops. Do not apply the sludge to vegetable gardens. Although the human risk is very low, due to the slightly elevated cadmium content, this precaution is advised.

Mix the composted sludge into the soils as if using high grade fertilizer. The fertilizer value of the compost is roughly 1 - 0.5 - 0.2 (N-P-K); the carbon/nitrogen ratio averages at about 30.