

Ajman Sewerage Project Sludge Valorization Feasibility Study



Innovative management options for landfill disposal of organic wastes such as sludge are an important step toward achieving sustainable development.

Thematic Area: Assessment of Natural Resources in Marginal Environments

Purpose: Provide an overview and evaluation of the current state of sewage sludge management and production in the Emirate of Ajman

Geographic Scope: UAE

Timeline: 1 September 2013 - 31 January 2014

Funding Agency: Ajman Sewerage Company (ASPCL)

Partners:

- Ajman Sewerage Company (ASPCL)
- Department of Public Work and Services - Ras Al Khaima
- Ministry of Environment and Water
- Regulatory and Supervision Bureau - Abu Dhabi
- Abu Dhabi Sewage Services Company
- Municipality of Dubai
- Municipality of Sharjah

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The United Arab Emirates (UAE) has set a zero waste to landfill goal by 2020. With an everincreasing population and massive economic development projects underway, an important challenge in the next decade will be managing the steady increase of biosolids requiring safe disposal. The integrated and sustainable waste management practices offer the government a viable route. The potential value of sewage sludge as soil conditioner and a source of important plant nutrients has further compounded the interest in turning waste into alternative forms of energy to reduce the carbon footprint. Environmental and human health issues that arise from the handling of sewage effluents have led to global regulations and standards to make disposal safe for people and the environment.

Recognizing the potential of sludge and biosolids, the International Center for Biosaline Agriculture (ICBA) partnered with Ajman Sewerage Private Company Limited (ASPCL) to launch the Sludge Valorization Feasibility Study project that investigated the potential for sewage sludge production, its compliance with the regulations, and its valorization feasibility. Subsequently the project propose a comprehensive road mapfor proper utilization of sludge produced after treatment of wastewater in Ajman. This partnership supports the vision of the UAE, in general, and the emirate of Ajman, in particular in reducing waste and achieving sustainability and a zero waste environment that does not require landfill disposal.

Valorization is emerging as a strong trend to enhance wasteto be valuable materials.

Activities and Outcomes

The study examined the status of sewage sludge in Ajman and its capacity to be reused as biosolids to determine the appropriate markets and the restrictions relating to quality and quantity as well as the need for legislation. Findings reveal that the total Sewage Sludge (SS) production potential of UAE is estimated at 104,319 tons/year of which about half is attributable to Abu Dhabi. Ajman produces 4,161 tons of SS per year. Survey results further show a greater part of the SS goes into land filling with 100% landfill in Ajman, Ras Al Khaimah and Fujairah. In Dubai and Sharjah, SS undergoes further processing to be used either as soil conditioner or compost. Potential market demand of the sludge produced includes agriculture, forestry, floriculture, composting facility, municipalities and landscaping companies.



A roadmap toward regulated parameters on sewage sludge is useful for landscape companies, municipalities, compost and wastewater treatment plants and local farmers.

sample of producers and end-users of biosolids currently engaged in the market. In addition, a quantitative survey of 38 farmers from Ajman emirate was carried out. Of the farmers interviewed, 20% are using sludge. Of these 10% use dried sludge and 10% composted sludge.

The international and national applicable regulations of biosolids were examined through five perspectives: (I) as a technical term to be defined; (II) as a substance whose quality can be measured; (III) as a resource which has only disposal or use as a binary set of options for its ultimate outcomes; (IV) as a subject of international regulation and control; and (V) as a creatable product whose producers are bound by a specific set of rules and responsibilities. The combined data, information, and synthesis from these five viewpoints gave a clear picture of the current status quo surrounding the issue and indicate future directions. By utilizing this information in conjunction with current practices, new strategies and methodologies can safely be developed to improve the production, handling, and promotion of biosolids within the framework of accepted practices. The study concludes that Abu Dhabi's Regulation and Supervision Bureau (RSB) regulation can be useful as a guide for the emirate of Ajman.

Future Directions

ASPCL is utilizing the recommendations of this study to support the decision-making process with regard to production quality and potential marketability. ASPCL might approach local farmers who may have already received information regarding the quality and the agronomical benefit of the product. Establishing further model demonstration farms in the emirate of Ajman will be useful for farmers to witness firsthand the importance of the biosolids as a soil amendment.

In addition, action points for producers and users were identified alongside the benefits of applying biosolids in agriculture, including the improvement of soil as well as the replacement or supplementation of fertilizer nutrients. Throughout project activities, all relevant agencies were involved in exploring the current status of biosolids production, regulations and standards across the UAE. As a result, a workshop was held in Ras Al Khaimah in collaboration with the partner institutions and organizations. The workshop emphasized production within the context of international standards, potential marketability, and the present situation for producers and clients. The outcomes and recommendations resulting from the workshop were incorporated in the main report. The main report also contained a literature research, a review of international regulations, an analysis of historical data on local sludge, and interviews of a



The completion event ceremony of the Sludge Valorization Feasibility Study was held at ICBA headquarters on 16 September 2014.