TRANSFORMING YOUR MEDICAL WASTE INTO CLEAN AND RENEWABLE ENERGY: A NEW AND INNOVATIVE SOLUTION

BioLogic Environmental Services & Waste Solutions is striving to change the way we view medical healthcare waste. What is currently considered harmful to the environment can now be transformed into an energy resource, giving your waste a second life.

Medical healthcare waste from the life sciences industry is primarily disposed using two different treatment methods: autoclaving-to-landfill and incineration. However, due to increasing concerns regarding landfilling and growing efforts to manage wastes and materials more sustainably, energy recovery is increasingly being explored as an option. BioLogic Environmental Services and Waste Solutions (BESWS), a medical and regulated waste management facility, specializes in implementing Energy-from-Waste (EfW) technologies, which can give medical wastes a second use and help better manage downstream risk.

EfW is an alternative to landfilling used for municipal solid waste (MSW) and other non-hazardous waste streams. Widely used in Europe, EfW diverts waste, traditionally intended for landfill or incineration, where it undergoes combustion in specially designed boiler chambers. The heat from this process is recovered to produce steam, which is then used to generate electricity. Once the energy is harnessed from the EfW process, it is now available for utilization.

Reducing GHG Emissions

The EPA estimated that for every ton of MSW diverted from landfilling to EfW, approximately one ton of emitted carbon-dioxide equivalent in the atmosphere is prevented.[2,4] This is because the trash burned at an EfW facility does not generate methane, as it would normally in a landfill. Also, the electricity generated from EfW facilities offsets the greenhouse gases produced from fossil fuel derived energy.[2,5] Thus, EfW technologies are recognized under the Kyoto Protocol's Clean Development Mechanism Program and are currently a source of greenhouse gas offset credits.

Under the Clean Air Act, EfW facilities must use modern air-pollution-control equipment to ensure all emissions are at levels safe for public health and the environment. In addition, EfW facilities are specifically subject to regulations under the EPA's Maximum Achievable Control Technology Standards. Due to the high temperature inside the combustion chambers, coupled with advanced scrubbers and particulate traps, most pollutants never get released into the atmosphere.[2] For example, Covanta, a leading developer in EfW technology, is currently operating with emissions at 60-90% below regulated levels.[7]

EfW and the Production of Renewable Energy

EfW has been recognized as renewable by the federal government for nearly thirty years under a variety of statutes, regulations, and policies.. The source of fuel (e.g. waste) is consistently replenished without the need to drill and mine for natural non-renewable resources. A typical EfW plant is able to generate approximately 550 kilowatt-hours per ton of MSW.[2]

In terms of sustainability, EfW technologies have been used to effectively provide electricity to residential, commercial, and industrial consumers. The Covanta Marion EfW facility in Oregon, processes 550

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tons of solid waste per day, generating up to 13.1 megawatts of renewable energy for Marion county, enough to supply about 7,800 households in addition to the plant itself.[6,7]

Metal Recycling: Almost Nothing is Wasted

After combustion, ferrous and non-ferrous metals that are included in the waste stream are recovered from the remaining ash. Recycling these metals reduces the need for mining and the environmental impacts associated with processing ores into virgin metal. The relatively small quantity of remaining ash (10% by volume) from EfW facilities can be beneficially reused. Approximately one-third is currently used as landfill daily cover, and there is significant opportunity for further reuse as a source for aggregate products.[3]

Transformation of Your Medical Healthcare Waste

This same waste management alternative is available for your medical healthcare waste. When used to manage medical wastes, EfW recovers energy, giving your waste a second use, and helps reduce downstream risks and liability. Depending on the specific medical waste stream, EfW can also offer the benefits of GHG reductions and secure destruction of pharmaceuticals and other certain persistent organic pollutants that we want to remove from circulation.

BioLogic strives to be at the forefront of innovative and environmentally sustainable waste management applications. It begins with our logistics and waste management teams, who are specifically trained to calculate and schedule routine pickups from all of our waste generators in a manner that minimizes driving time. The collected medical waste is then treated at BESWS on-site via autoclave sterilization, in compliance with the California Department of Public Health. Once the waste is rendered non-infectious, it will be processed at an EfW facility, where the metal (eg. sharps) fraction of the waste will be recycled, and the combustible fraction, will be converted into energy (Figure 1).

Figure 1. Flowchart of BESWS implementation of Waste to Energy processes. Regulated waste originally intended for landfill or incineration, will be converted to clean renewable energy.

References:

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