

The problem of waste disposal in chemical engineering essay

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The problem of chemical waste disposal has for a long time been a dilemma for the industrial sector. In ancient times, small industries, such as smelting and cloth making, had some wastes to dispose, and this was also a problem (Martin and Schinzinger 54). In modern industries, chemical engineering is a vital sector of each and every industry dealing with any chemical, either as a raw material, a byproduct, a product, or another item used in the production process.

Although several advances have been reached to improve chemical engineering in all industries, and laws are established to guide the processes of waste disposal, it is debatable that chemical waste disposal is the largest and most malignant problem that affects chemical engineering, and in fact hinders the development of the sector.

Chemical engineering in industries has been recognized as a tool for generating hazardous wastes to the environment, but also a tool for solving the problem. Most of the hazardous wastes recognized by authorities come from industries, mainly due to poor or inefficient engineering foundations (Martin and Schinzinger 54). Four types of chemical wastes have been recognized: chemical wastes from unspecific sources involved in industrial processes such as halogens, wastes from specific sources such as herbicides in water, discarded chemical products such as benzene and toxic wastes from any source such as vinyl chloride (American chemical society 1).

Most of these wastes are either toxic to humans, animals or plants, destroy environmental factors such as soil, air and water, or may be carcinogenic, causing mutations in all animals and plants (Vesiland, Worrell and Reinhart

76). Most chemical wastes contain heavy metals, nonmetals and other compounds, most of which are both toxic and have active nuclear decay processes. Diseases and other conditions are associated with such wastes (Pritchard 1). According to Caroline Black and Chris Stavroudis (2009), most of these wastes are disposed together, and several things may happen. They may react to form even more dangerous compounds, they may react to produce fumes and other air borne compounds, or they may be incompatible, thus producing excessive heat to the environment.

The problem of waste disposal has developed into a very critical ethical issue, characterized by heated arguments and campaigns. It has become an ethical dilemma, with different groups, individuals and organizations taking different sides (American chemical society 1). Scholars in chemical engineering argue that waste disposal is a part and parcel of a developing industrial economy, and as such, methods for disposal should be dealt with depending on the chemicals involved (Pritchard 1). Designing of proper Chemical engineering methods of waste disposal would therefore be the best solution to the problem, rather than abolishing such industries. In addition, they argue that all stakeholders have an equal responsibility in ensuring that the problems do not persists (Vesiland, Worrell and Reinhart 76). On the other hand, enthusiasts argue that chemical wastes are purely a responsibility of the chemical engineers, while still other hard liners argue that such engineering practices should be abolished for the sake of the environmental health (Pritchard 1).

As per the discussion, it is quite possible to argue that chemical engineering as a profession should be more focused on responsibilities. Responsibility does not only apply to the industries, but also to other stakeholders in the process. Innovation of correct engineering methods of waste disposal should be given the first priority (Watts 23). An important solution to this dilemma would include collective responsibility between the engineers, the authorities and environmentalists as well as health agents. The work of waste disposals cannot be fully a responsibility of the engineers as other persons.

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