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Sulfur disposal

Posted by Anonymous on Wed, 2015-03-18 13:00

Sulfur disposal: Could you please advise on the procedure for disposing of sulfur, specifically sulfur mixed with iron filings and HCl.

Voting:



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Year Level:

7

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Laboratory Technicians:

Laboratory Technicians

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Sulfur disposal

Submitted by sat on 27 March 2015

Answer reviewed 27 February 2023

Disposal of Sulfur

Sulfur powder, whilst it is a designated hazardous substance, a flammable solid and a dust inhalation hazard¹ in particular circumstances, has a hazard level considered to be towards the low end of the scale. Indeed, it is widely sold in garden shops as a soil conditioner to lower the pH of alkaline garden soils.

The recommended disposal is via a licenced chemical waste disposal company. Details for suitable companies can be found on our School Science Suppliers list.² However, if quantities are small and are not contaminated with other substances, then responsible disposal as a soil conditioner could be considered. Dosage rates advised for soil treatment are commonly in the range of 25 to 100 grams of sulfur per square metre when dug into the top 10 cm.³ Therefore, if disposing by burial in soil, we recommend that you operate within these limits.⁴

Disposal of sulfur mixed with iron filings and HCl

From the given details, we are deducing that the material for disposal is the residue from a series of student investigations about the separation of a mixture of sulfur powder and iron filings, with the dissolving of the iron in hydrochloric acid being one of the steps in this investigation. If so, then the process would be for the hydrochloric acid to dissolve the metallic iron, and to leave the sulfur as a solid that could be filtered out and thus separated.

Please respond to us with further details if these assumptions are not correct, or if this response does not fully meet your particular circumstances.

In assessing disposal methods, it is of course not possible for you to have a residue with both iron filings and hydrochloric acid, as these will react chemically until either one or the other is used up. So, we assume that your mixture contains sulfur and either an excess of iron filings or an excess of hydrochloric acid. We will address both possibilities. We also assume that the waste quantities are relatively small and are derived from small-scale student activities.

- For a mixture of sulfur powder and iron filings, if the mixture is not suitable for storage for reuse, then it can be put aside for chemical waste collection. Or, if the quantity is relatively small, it could be safely disposed of by burial. Metallic iron is extremely widespread throughout our environment and in this form not hazardous. The iron filings would soon rust to hydrated iron oxide, and the sulfur would, in time, react to lower the soil pH.
- For a mixture of sulfur and hydrochloric acid, we suggest that you first neutralise the excess hydrochloric acid. This is easily done through reacting it with a carbonate. Marble chips (CaCO_3) or sodium hydrogen carbonate (NaHCO_3) would be cheap options for this. You will know when the reaction is complete as the bubbling off of carbon dioxide will stop, indicating that the acid has been depleted. Once neutralised, the solids can be filtered out (a funnel with a wad of cotton wool is adequate for this), the solutions can then be flushed down the sink. The solid sulfur can then be stored for later collection, or if quantities are relatively small, disposed of by burial, as above.

References/footnote

¹ ChemSupply Australia website, (2023), *Safety Data Sheet: Sulfur*. Please search the product information page on the website for the current SDS for sulfur <https://shop.chemsupply.com.au/>

² Science ASSIST, 2020, School Science Suppliers List, Science ASSIST website, [School science suppliers](#)

³ The Green Life Soil Co, Our Mineral Products: *Sulfur*, Green Life Soil Co website, <https://greenlifesoil.com.au/gardening/minerals-fertilizers>

⁴ Please note, as a general principle we do not endorse the disposal of laboratory chemical wastes either by local burial or in general refuse. We do so in this case only after careful consideration and risk assessment of the particular substances.

⁵ Wilkinson, S. 2015. Science Business Manager, Scientific Services Division, ChemCentre. Western Australia. Personal communication.

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