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Posted by Anonymous on Wed, 2015-04-29 12:30

Organic waste: Students are investigating the reactions and properties of organic compounds from Heinemann Chemistry 2 VCE units 3 & 4. The waste will be minimal but we have no waste collection for this type of experiment in place to date.

Can I store the resultant waste together for collection?

Voting:



No votes yet

Year Level:

Senior Secondary

Laboratory Technicians:

Laboratory Technicians

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Submitted by sat on 15 May 2015

The brief answer to your question is yes, you can store the resultant waste together while waiting for collection and disposal by a licenced chemical disposal contractor. However, there are some other options rather than collecting all in one container. It is important that a risk assessment is performed prior to undertaking this, or any other practical activity, taking into account disposal method for waste products.

This practical activity uses small volumes of the organic chemicals: cyclohexane, cyclohexene, hexane, ethanol and *tert*-butyl chloride along with iodine, potassium permanganate, potassium hydroxide, silver nitrate, sodium hydrogen carbonate, glacial acetic acid, dilute nitric acid and concentrated and dilute sulphuric acid. The SDS for cyclohexane states that it should not be allowed to enter waterways, this then removes the option of diluting and disposing to the sewerage. It is not illegal in Australia to allow volatile waste to evaporate to the atmosphere in a fume cupboard, however, this is not the best practice that Science ASSIST recommends.

The recommendation in the textbook is for all of the organic waste to be collected in a waste container in the fume cupboard. Whilst this is acceptable considering the chemicals involved, it is an option to separate the halogenated organic waste from the non-halogenated waste. The term 'halogenated' refers to the presence of halogens such as iodine and chlorine. In addition, part D of the practical activity contains an organic acid, which can be diluted, neutralised and flushed to waste.

The best practice for disposing of this, and other organic waste, is to collect it in a labelled waste collection bottle and have it collected by a licenced chemical disposal contractor. In this case, the ideal collection process is in two containers.

1. **Halogenated organic waste:** Products from parts A and B of the activity result in halogenated organic waste, which is more difficult and expensive to dispose of (than non-halogenated waste). The best option here is to collect these wastes (Part A and B) in one container labelled as halogenated waste.
2. **Non-halogenated organic waste:** Products from Part C of the activity could be collected in a second labelled container as non-halogenated waste. However, with the small quantities involved here, it may be more practical to be collected with waste from Parts A and B and all disposed of as halogenated waste.
3. Part D could be diluted, neutralised, and flushed down the sink with water.

It is good practice to keep track of the substances which are added to a waste bottle. One way to do this is to attach a blank label to the back of the waste bottle. Each time waste is added to the bottle, the names of the substances added can be recorded on the label. When the bottle is full, then the hand-written label can be replaced with a printed label containing this information.

Further information can be found in answers to similar questions: [organic chemistry](#) or [Chemical Waste from Ester Prac.](#)

References:

Commons, Penny 2012 'Heinemann Chemistry 2 Student Workbook (2e) 2nd edition,

Pearson Australia (fully updated for the 2013–2016 VCE study design).

Chemwatch 2013 Safety Data sheet: Cyclohexane

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