



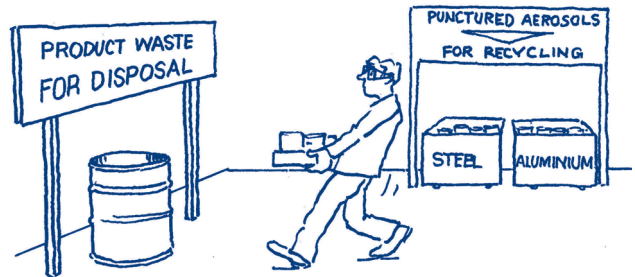
RECYCLING EMPTY AEROSOLS FROM INDUSTRIAL, COMMERCIAL AND INSTITUTIONAL PREMISES

The drawings in this guide are for illustrative purposes only and are not intended to be instructive.



As empty aerosols are still pressurised containers and are likely to contain residual amounts of flammable liquid and/or gas, in an industrial, commercial or institutional environment they may be classed as a Hazardous Waste¹. Furthermore, depending upon the product type, some aerosols may contain irritants or residual amounts of liquids or solids that have other hazardous characteristics that make them harmful, or may be dangerous to the environment.

However, if an aerosol is punctured and the contents removed, then the metal and plastic components can be recovered and recycled. Any product residue may need to be removed and disposed of as Hazardous Waste, but the quantities will be minimal and for many empty (i.e. used up) aerosols this might not be necessary. Typically an 'empty aerosol' will contain about 3% by weight of its initial contents, of which half will be propellant gas which will disperse as soon as the aerosol is punctured. Aerosols should be punctured as soon as possible rather than stored up for puncturing later.



Aerosol puncturing must be carried out in a designated area specifically set aside for the purpose. The area and the proposed puncturing operation must first be assessed under the requirements of DSEAR² to identify any measures needed to eliminate or reduce, to an acceptable level, the risk of injury to people from fire or explosion. As a minimum, the designated aerosol puncturing area must have a free flow of air. Naked flames and other sources of ignition, and activities such as smoking must be excluded.



Puncturing should not be carried out over a pit as the propellant gases are heavier than air and will sink and could collect in the pit. Typically suitable areas include an outside yard (weather permitting) or a fume cupboard. A poorly ventilated area, like a basement, is not suitable for puncturing aerosols.

Before any aerosols are punctured, a competent person should conduct a COSHH assessment³ of the contents. Operatives must be fully trained in the puncturing procedure and must wear appropriate Personal Protective Equipment (PPE). In general, face or eye protection should be worn to prevent any spray being blown into the eyes when the aerosol is punctured, and overalls should be worn to protect clothing. Suitable gloves should be worn to prevent cuts from any sharp edges when handling the punctured aerosol. A protocol for puncturing aerosols is set out on the adjacent page.



¹ Although in the UK aerosols are not a category of Hazardous Waste under the proposed List of Wastes Regulations 2005 (SI 2005 No 894), materials containing flammable solvents and/ or flammable aerosol propellants are classed as Hazardous Waste. As a result many empty aerosols from industrial, commercial or institutional premises may fall under the Hazardous Waste Regulations 2005 (SI 2005 No 895) because of their residual contents.

² Dangerous Substances and Explosive Atmospheres Regulations 2002 (SI 2002 No 2776).

³ A risk assessment of the operation carried out in accordance with the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (SI 2002 No 2677) to identify the potential hazards arising from the chemicals likely to be present.

A Protocol for Puncturing Empty Aerosols



Equipment Required

- A well-ventilated area designated for puncturing aerosols.
- An earthed device⁴ for puncturing aerosols.
- Suitable goggles, overalls and protective gloves.
- A notice warning that aerosol puncturing is taking place.

Procedure

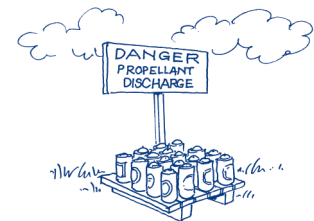
Step 1. Check that the aerosol is empty

- Check that all of the propellant in the aerosol is used up. This is important because full, part full or faulty aerosols must be disposed of complete as Hazardous Waste and should not be punctured.
- In the well-ventilated area, first make sure that the aerosol is fully empty by pressing the actuator button whilst pointing the nozzle away from your body until no more product comes out.
- Check that the aerosol is empty by shaking the can. If all of the product has come out then there will be no 'sloshing' noise. If there is product still in the aerosol, do not puncture it (unless the puncturing device is specifically designed to handle full or part full aerosols) because the valve may be blocked and the aerosol may still contain a significant amount of propellant. In this case, the unpunctured aerosol should be disposed of as Hazardous Waste.
- Remove any easily removable plastic components such as the cap or actuator and send them for recycling with other plastics.



Step 2. Puncturing the aerosol⁵

- Make sure that the puncturing device is earthed and that you are wearing the appropriate PPE.
- Place the aerosol in the aerosol-puncturing device and puncture.
- Leave the punctured aerosol in the ventilated area for a while to allow any released propellant to disperse. Remember that propellant gases are heavier than air and will sink.



Step 3. Recovering the materials for recycling

- Turn the punctured aerosol upside down to pour out any remaining product into a container. In many cases nothing will come out of the aerosol.
- The liquid collected should be disposed of as Hazardous Waste, but ensure that residues from different types of aerosols do not interact in storage before you dispose of them.
- Remove any plastic components not easily removed in Step 1 and send them for recycling.
- If you want, you can now crush the punctured metal aerosols before adding them to the general metal waste for recycling.

⁴ Equipment is available commercially in a variety of sizes and sophistication, some of which are designed to handle full or part-full aerosols. Whilst BAMA does not endorse any puncturing equipment, a non-exhaustive list of suppliers is available upon request.

⁵ Where the number of aerosols is small, it may not be economic to purchase specialist puncturing equipment therefore a method for puncturing one or two aerosols at a time by hand is outlined at the end of this Guide.

This completes the procedure. Take care when handling punctured aerosols as there may be sharp edges caused by the aerosol-puncturing device. The key things to remember when disposing of used aerosols are to make sure that:

- Where possible all of the aerosol product has been used up.
- Aerosols are punctured as soon as they are emptied rather than stored up until there is a large number.

Puncturing Empty Aerosols by Hand

If you only have one or two aerosols to dispose of, you could use the following alternative to Step 2.

Equipment Required

An earthed table or support.

An aerosol-piercing device consisting of a brass spike (at least 10 cm long) and a wooden or rubber headed mallet⁶.

Alternative Step 2 (for one or two empty aerosols)

- Wearing the appropriate PPE, place the aerosol on the earthed support.
- Hold the aerosol with one hand; use the thumb and first finger to position the brass spike on the side of the aerosol pointing away from you. For most aerosols the best place is the rounded shoulder of the aerosol next to the valve, but the side wall of the can may be used. If the hole is made behind the valve on the opposite side of the aerosol to you, this will give added protection, as it will tend to direct any discharge away from you.
- Make a small hole in the aerosol with the brass spike using the wooden or rubber headed mallet to apply a force.
- Keep the point of the device firmly in the hole once it has been formed.
- By turning the brass spike in the hole, propellant may be heard escaping. Whilst holding the aerosol in its position, gently move the spike to control the release of any gas. If any is released, use the piercing device to restrict the flow and hold it closed for a few moments.
- The release of propellant should be controlled in this way until any sound of escaping gas ceases.
- Leave the punctured aerosol in the ventilated area for a short while to allow any released propellant gas to disperse. Remember that propellant gases are heavier than air and will sink.



⁶ A brass spike and a spark proof striker must be used to prevent the risk of a spark, because even when empty, most aerosols contain some flammable propellant gas. Other materials are not suitable.

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