

## **Aerosol recycling: Frequently Asked Questions**

### **Why restrict the scheme to just empty post-consumer aerosols?**

A: The hazards associated with handling empty post-consumer aerosols are well characterised and have been considered in the risk assessments upon which BAMA's guidance is based. The hazards associated with handling other aerosols are outside the scope of these risk assessments and consequently the handling procedures outlined here may not be appropriate.

Practical experience of recycling aerosols in the UK, Europe, USA and Canada indicates that the occurrence of post-consumer aerosols containing more than minimal residues is low and does not create a problem during processing at a MRF. Effective householder education should be used to minimise the residual content of aerosols recovered for recycling. Research shows that no significant differences as regards the composition of municipal solid waste, particularly of metal containers, were observed among different countries.

Batches of aerosols from industrial sources should be sent to a specialist waste company for disposal. Separate guidance on the disposal of full or part-full aerosols is available from BAMA.

### **Are any other restrictions necessary on the range of aerosols recovered?**

A: None of the recycling schemes in the UK, USA, Germany, France or the Netherlands restrict the range of post-consumer aerosols recovered.

The UK National Household Hazardous Waste Forum (1998) has defined household hazardous waste as 'any material discarded by the household which is difficult to dispose of, or which puts human health or the environment at risk because of its chemical or biological nature'. Classification is based on the contents of the packaging, and so empty aerosols are not regarded as household hazardous waste.

### **What can I do with my recovered material?**

A: Markets exist for recovered material containing aerosols which can add revenue to the recycling scheme and avoid landfill costs and taxes. Novelis Recycling accepts aluminium aerosols mixed in with used aluminium beverage cans as long as they make up no more than 2% of the material and are depressurised by baling. The CanRoute scheme operated by Corus Steel Packaging Recycling accepts recovered steel containing aerosols.

Many other secondary metals dealers also accept recovered steel or aluminium containing aerosols.

It is important to discuss the actual specification for the recovered material with your secondary metals dealer.

### **What about CFCs?**

A: In the UK consumer aerosols have not contained CFCs since 1989.

### **What if full aerosols get into the MRF material stream?**

**A:** Inevitably a small number of aerosols with a significant residual content will be recovered and get into the baler and be crushed. However, practical experience shows they do not create problems provided the safety guidance in this document is followed.

Full aerosols found in the MRF feed stream should be removed and diverted to the hazardous wastes stream or emptied using special equipment.

The MRF operator should avoid handling batches of full aerosols, which are outside the scope of this Guidance.

Why not segregate aerosols from the steel and aluminium streams?

**A:** The risk assessments reviewed consider the situation where empty aerosols are diluted with other cans. If aerosols were segregated and processed separately the quantity of flammable gas or liquid, and hence the hazard associated with each batch, would naturally be increased.

### **Do I need additional ventilation?**

**A:** Good ventilation in the area of the baler feed hopper, baling press and last two bales formed facilitates rapid dilution of flammable vapours released during compaction. Air changes of about six per hour would be sufficient to prevent the lower explosion limit (LEL) concentration being approached.

In a large and draughty MRF very little additional ventilation may be required; open sided units, with no pits<sup>1</sup> or depressions in which gas could collect, should not require mechanical ventilation. If the baler is located in a corner or relatively confined area, then mechanically assisted ventilation may be required.

Gas sensors in the area which would switch on mechanically assisted ventilation when 25% of LEL and alarm at 40-50% of LEL are one option. If used, such sensors require the implementation of a programme of routine tests to ensure they are maintained in effective working order.

<sup>1</sup> *Propellant gases are generally heavier than air so will collect in pits or depressions*

### **What does 'Zone 2' classification mean?**

**A:** DSEAR<sup>2</sup>, which covers the safety of workers at risk in flammable atmospheres requires the classification of places where, as a result of local and operational conditions, an explosive atmosphere either exists or may occur. In such places precautions must be taken to protect the health and safety of the workers concerned. Hazardous places are classified on the basis of frequency and duration of the occurrence of an explosive atmosphere. A Zone 2 Area is defined as:

*A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation, but if it does occur with persist for a short period only.*

As far as possible all potential sources of ignition should be removed from the baler area. For example smoking should be prohibited and only equipment suitable for a Zone 2 protected area should be used within one metre in all directions around the baler and finished bales. Lighting over the area should, therefore, not need to be protected if it is installed outside the Zone 2 Area.

The performance of work in this area is permitted only if these precautions for this Zone are applied.

<sup>2</sup>Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) (SI 2002 No. 2776)

**What precautions are necessary for 'explosion control'?**

**A:** No loose panels or grids etc. Should be allowed on the baler. All employees should be outside a zone marked round the baler while material is being compacted. This is good practice even when aerosols are not being handled.

**What precautions are necessary for handling newly formed bales?**

**A:** The area one metre horizontally and half a metre vertically around new bales should be considered as coming within the Zone 2 classification.

A proportion of any flammable material released during compaction may be retained in the bale, and subsequently released over a period of time. This may result in the LEL being exceeded briefly in the immediate vicinity of the new bale. Volatile substances such as propellant gases are released rapidly, with less volatile substances such as solvents released more slowly. Bales should be promptly removed from the baler to prevent their involvement in a subsequent fire.<sup>3</sup>

**What fire precautions should I take?**

**A:** BAMA's advice is as follows:

i) Fire extinguishers:

Portable fire extinguishers should be provided, and maintained in working condition. When the MRF is set up the location of the fire extinguishers should be determined, taking advice from the Fire Authority and following the guidance given in BS 5306. It is recommended that fire extinguishers be mounted on the wall, or fittings, in clearly marked fire points and where the emergency procedures are posted. These should be beside fire exits and in other prominent positions. The extinguishers should be checked daily as part of a supervisor's/managers audit.

ii) Fire Alarm

A fire alarm, clearly audible throughout the building should be provided

iii) Housekeeping

A high standard of housekeeping should be maintained to prevent the accumulation of combustible material beneath or around the baler and in the bale store. Then even if a small flash fire of flammable gas or vapours should occur, it would be unlikely to spread.

3. In a study in Germany 15-30 minutes was required for evaporation of less volatile components at room temperature (20°C), leading to the recommendation that bales are allowed to aerate under supervision for approx. 30 minutes, longer at low temperatures.