

	Standard Operating Procedure		Reference	SOP 05
	Bulking of Waste in Transfer Stations		Inception date	February 2014
			Version	5
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			Approved by	BPG

### **1. Purpose**

To ensure that all appropriate safety measures are observed when bulking wastes together in order to prevent the mixing of incompatible wastes which may lead to an adverse reaction.

### **2. Scope**

This procedure applies to all Hazardous Waste Transfer Stations.

#### **Definitions**

Liquid chemical wastes are organic & inorganic waste solutions including solvents & corrosives.

Low risk materials include oil, oil/water and water based paints.

### **3. Responsibilities**

A Site Chemist will:-

- (i) Inspect, sample and assess wastes before bulking or mixing to ensure they are chemical compatible.
- (ii) Ensure that operatives are following this procedure and are only bulking those materials that have been assessed as suitable.
- (iii) Ensure that the operatives have been informed of any hazards associated with the chemicals they are being asked to bulk.

### **4. Pre-assessment**

The chemist must assess the compatibility of the materials to be bulked together, ideally 24 hours before the proposed work is carried out.

A desk study should be undertaken prior to physical compatibility testing. The desk top study can be carried out by using data sheets, information provided by the customer and the chemical reactivity worksheet. It should ensure that the wastes do not contain any excluded or incompatible materials as outlined in section 6.

### **5. Compatibility Assessment**

Once the desk top study has been completed and the waste has been judged to be suitable for bulking a compatibility test must then be carried out. The compatibility test which needs to be performed is dependent on the level of risk that the type of material poses.

Waste streams such as waste oils and oil and waters (excluding fuels) are subject to level one testing before they can be bulked.

Waste streams of similar composition, from the same process and producer, which show as compatible on the chemical reactivity worksheet are subject to level two compatibility testing.

Waste streams which are different in chemical composition, a similar stream from different producers, or show as "caution" in the chemical reactivity worksheet are subject to level 3 compatibility testing.

All wastes to be bulked should be assessed by the site chemist prior to bulking.

#### Levels of compatibility testing:

1. Level 1 compatibility testing comprises of visual inspection and pH testing.
2. Level 2 compatibility testing involves visual inspection, pH testing and mixing of samples looking for any adverse reaction.
3. Level 3 compatibility testing involves sampling of all wastes and completion of the Dewar testing method outlined in guidance note GN HW 06.

All levels of testing require a compatibility sheet, QF659/128, to be completed and signed off by the chemist before bulking can commence.

Guidance Note GN HW 19 outlines the procedure for using the chemical reactivity worksheet.

**Only wastes which have undergone the above testing can be bulked.**

#### 6. Excluded Waste

Cyanides, isocyanates, phenols and 2-pack paints MUST NOT be bulked under any circumstances.

Other excluded wastes include water reactive materials or lachrymators for example benzoyl chloride. Any maldorous materials eg. sulphides, amines, pyridine, styrene.

Mixed acid bulking is strictly prohibited i.e. acids may only be bulked if they are chemically “the same”: For example, HCl with HCl would be permitted but HCl with HF or H<sub>2</sub>SO<sub>4</sub> etc would not.

The acids MUST have “the same” acidity confirmed by suitable means if from different sources / batches (measurement of pH is not sufficient) and not withstanding the preceding, be compatible as detailed below.

Bulking of laboratory smalls scale containers of acids (Winchesters) is NOT permitted without the sanction of Site Management unless there is a large quantity of same acid from the same source.

#### 7. General Health & Safety

The following PPE must be worn when carrying out this procedure:

- Protective footwear (BS EN 345)
- PVC gloves (EN 388 and EN374 COMPLEX DESIGN) with Kevlar Inner gloves or equivalent
- Hard hat (EN 397)
- High visibility jacket (EN 471 class 2)
- Safety goggles (EN 2166 2 B 2.4.9) fitted with Blast/splash visor (EN 166 B)
- Appropriate overalls (Anti-static for flammable tankers)

In situations where the operative or chemist wears safety glasses with prescription lenses then a full face visor must be worn in addition to the glasses to afford facial protection against chemical splashes.

Additional PPE, such as a chemical resistant suit, may be worn as instructed by the chemist or supervisor.

#### 8. General Bulking Procedure

Wastes should only be bulked into UN-approved IBCs or 205l bung-top or clip top drums.

Care must be taken to ensure that the reception containers are clean and free of any contamination.

Transfer from drums to IBCs should be done using a pump with dip pipes to reduce the potential exposure to chemicals. Wastes in smaller containers (under 25l) may be manually poured into the receiving vessel but a funnel with dip pipe must be used to minimise spillages and releases of vapour. In the situation where a pump is not available it may be permissible to bulk materials by pouring using a tipper forklift truck. But again a funnel must be employed to reduce any chemical exposure. In these circumstances operation must not be left unattended. **Solvents must NOT be bulked in this manner.**

The chemist should direct and supervise the operative in the bulking operations and must periodically check that the process is under control.

The chemist/operative must complete a bulking compatibility form QF659/128 for each container. This should show the ID number of the source container or pallet of containers, the waste type(s), quantities and the ID of the reception vessel. In the case of Liquid Chemical wastes, note the temperature, physical changes and final flash point. The declarations required on the form must be completed and signed.

Prior to bulking commencing, the bulking sheet must be signed by a chemist to verify the compatibility. For liquid chemical waste, the operative is to be given a copy of the bulking compatibility form QF659/128, the operative must check the reference number of each container being bulked against the list. If a reference number is not on the list or the container has a label stating different contents to that on the list the operative must **NOT** bulk the container and must inform the chemist.

When bulking the operative should stay alert to signs of possible reaction and must inform the chemist immediately if he suspects there to be a problem.

The drums and containers should be emptied out as much as is reasonably practicable.

The now nominally empty containers should be rinsed out three times and the rinse water added to the bulking drum, or drummed separately as appropriate.

The rinsed containers should be left to vent for a minimum of 24 hours or until completely free of fumes before crushing, shredding or being sent for disposal.

Empty containers should be inspected for re-use. If they are re-usable, then they should be washed and placed into the appropriate storage area.

Any ID number issued to a container must include a reference to the earliest date of arrival of the individual bulked wastes.

Containers holding bulked liquids should have the lid or bung lightly replaced and the drum/IBC monitored for signs of any reaction. The container must be inspected before leaving the site at the end of the shift to ensure that no reaction is occurring and should be re-inspected first thing the next working day. If after 24 hours no reaction is apparent the lid/bung may be applied firmly.

Following completion, site records should be updated to include all bulking references.

## **9. Solvent Bulking**

For the purpose of this procedure, solvents are defined as free flowing liquids with a flash point below 60° C. This must be determined by the use of an approved flash point method.

### **Equipment:**

- Plastic drip tray
- Suitable UN approved tight head drum
- Drum Trolley
- Brass drum key
- Absorbent material
- Carbon pack filter with ¾" BSP screw fitting/LEV system
- Solvent funnel fitted with flame arrestor and dip pipe extending to bottom of container
- Earthing point

If bulking larger containers (>25l) an electrically driven diaphragm pump rated to ATEX Zone 1.

If bulking into IBCs, these must be conductive and connected to the earthing point.

### **Pre-Bulking Checks**

Ensure earthing straps are not damaged and are connected to the appropriate earthing plate/stake

Ensure clips on earthing straps are in good condition

Check flame arrestor in funnel is in place and that the dip pipe is not blocked

Check the drip tray is free of solvent from previous bulking activities

#### Key Safe Behaviours

**DO NOT:** Bulk any materials that have not been assessed and passed as suitable by the chemist  
Bulk solvents without the equipment being appropriately earthed  
Use the funnel without the flame arrestor  
Continue bulking if you think a reaction may be taking place  
Allow other personnel into the bulking area

**DO:** Carry out the pre-bulking checks  
Maintain good housekeeping standards whilst bulking  
Close all containers after emptying and when the bulking drum is full  
Check you have been provided with the correct antistatic PPE  
Keep volumes of solvents in the bulking area to a minimum

If the bulking is into IBCs and this is not being carried out under LEV, a full-face respirator fitted with an AX cartridge filter (specifically for solvents with a flash point below 65 °C) must be worn.

#### Equipment Preparation

Bulking of solvents can only take place in the dedicated bulking area, which should not be within an area where solvents are stored.

The receiving vessel and wastes to be bulked should be brought to the bulking area prior to bulking commencing. Volumes of materials should be kept to a minimum i.e. sufficient to fill one 205ltr at a time.

The area must be cordoned off with a barrier to prevent unauthorised personnel or vehicular access.

The solvent bulking funnel with its attached flame arrestor and dip pipe is securely screwed into the 2" bung of the drum.

The ¾" bung is connected to the carbon pack "scrubber" using flexible plastic pipe.

The receiving vessel is placed on the drip tray and an earthing wire attached to the bare metal on the vessel or carbon impregnated IBC.

The receiving vessel is labelled appropriately with the relevant unique drum identification number (see below), the appropriate UN number, proper shipping name and hazard warning diamonds.

A second earthing line is required to earth the container from which the solvent is being transferred if this is metal.

#### Bulking Operation

Bulking should only take place under instruction from and under direct supervision of the chemist.

**Each bulking step must be performed in the same sequence as the compatibility assessment.**

Solvents can only be bulked into UN approved 205litre bung top drums or UN approved carbon impregnated IBCs.

Transfer from containers into drums should be done by manually pouring into the receiving vessel by means of the funnel to minimise spillage (each container must be earthed before pouring begins) or, for containers >25ltr pumping using the ATEX pump specified above.

Each container should be opened when possible with non-sparking hand tools.

Each container must be poured slowly into the receiving vessel and not upturned and left in the funnel. The operative must monitor the pouring to check that the funnel and arrestor do not become blocked. If the funnel or arrestor do become blocked it is to be removed from the receiving drum before attempting to clean it.

The operative should monitor the volume of material in the receiving vessel on a regular basis to avoid overfilling.

During the process of bulking the operative should stay alert to signs of possible reaction and must inform the chemist immediately if he suspects there is a problem.

The containers should be emptied out as much as is reasonably practicable.

Depending upon the intended disposal route for the now nominally empty containers, these should either be disposed of as hazardous waste or be rinsed out and the rinse water added to the bulking drum or drummed separately as appropriate.

The drum containing the bulked materials should have or be allocated a unique identification number. This unique number must include a reference to the earliest date of arrival of the individual bulked wastes.

The drum should be left in the bulking bay. The bung should be lightly replaced and the drum monitored. The drum must be inspected by the chemist before he/she leaves the Site at the end of the day to ensure no reaction is occurring and should be re-inspected first thing the next working day. If no reaction is apparent the bung may be applied firmly.

The chemist must complete a bulking compatibility record QF659/128 for each drum. This should show the identification number of the source containers, the waste type and quantities.

When the bulking activity is complete, the drip tray should be inspected to verify it is free of any solvent.

## **9. Spillages**

Any spillages that occur during bulking must be cleaned immediately.

Spillages should be absorbed with an inert spillsorb or mopped with rags depending on the volume of the spillage. The contaminated materials should then be swept up using a brush and plastic shovel and placed into a clip top drum. The drum should be sealed immediately and labelled appropriately. If deemed necessary the area should be washed with water and/or detergent and the washings contained within the appropriate catchment area.

## **10. Records**

Following completion of bulking activity, the Incoming Waste Verification Form and Bay Log should be amended to include all bulking references from bulking activities. Copy of the Chemical Worksheet desk top study should be attached to the completed paperwork.