Biffa	Standard Operating Procedure	Reference	SOP 06
		Inception date	April 2012
	Laboratory Smalls Packing Procedure	Version	13
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		Approved by	BPG

1. Purpose

To ensure that when packing laboratory smalls, all appropriate segregation measures are observed, all documents contain the appropriate information, and that the methods used for physically packing the chemicals into drums are compliant with all legislation and associated codes of practice.

Wastes that are excluded from this procedure include Explosives, Radioactives, Organic Peroxides with a low SADT (Self Accelerating Decomposition Temperature – the lowest temperature at which self accelerating decomposition may occur with a substance in its packaging as used during carriage), Self Reactive Substances with a low SADT, Animal By-products, Controlled Drugs, Clinical Waste and those substances without an identified disposal route.

Please note that for these excluded substances, Biffa may be able to arrange collection or disposal via a different procedure.

Note: Laboratory smalls are usually defined as pure chemicals or compounds in bottles and small containers of less than 5 litres / kg in size. This procedure should also be adopted for other similarly sized packages.

2. Scope

This procedure is to be followed by Transfer Station personnel and Hazpack Chemists.

3. Responsibilities

It is the responsibility of the Location Manager to ensure that all waste arriving on their site has been assessed and packed in accordance with this procedure.

As the potential number of chemicals encountered will number in the many thousands, the laboratory smalls packing system requires a first principles understanding of Chemistry. To this end, all decisions concerning the packing and segregation of laboratory smalls must only be taken by a qualified chemist (qualified to a minimum of HNC) who has received the appropriate Biffa training.

4. Health and Safety

The following PPE should be worn when packing laboratory smalls in a transfer station environment:

- Safety Glasses (BS EN 166 1.F)
- Protective footwear (EN 345)
- PVC gloves (EN 388 and EN 374 COMPLEX DESIGN) or equivalent
- Kevlar Inners (EN 388)
- Hard Hat (EN 397) (dependant on location)
- High-visibility jackets/vest (EN 471 class 2)
- Overalls with long sleeves

Additional PPE such as respiratory equipment, chemically resistant suit may be worn should the nature of the job, or the location dictate.

When packing laboratory smalls on a producer's premises the location may dictate that some items (hard hat, hi-vis) of PPE may not be deemed necessary.

5. Procedure

Identification and listing

There are three scenarios that may be encountered when packing laboratory smalls

1) Packing laboratory smalls on a waste producer's premises, where the waste producer has supplied a list of the items requiring disposal, which simply requires verification;
2) Packing laboratory smalls on a waste producer's premises where no list has been supplied and Biffa are to be employed to identify the laboratory smalls and produce a list;
3) Packing laboratory smalls at a Biffa Waste Services Transfer Station, where the waste has been delivered to the Biffa site with a comprehensive list, but the drum contents require unpacking, verification and repacking for disposal.

Please note the various disposal facilities used may have their own requirements, procedures and exclusions when receiving laboratory smalls. All packing must reflect these requirements.

For each of the above scenarios the inventory list must be uploaded onto the Central System's Packaged Goods Upload Template.

In order to identify the wastes, the labels attached to the bottles / containers should be observed, as these will usually provide all the required information. It must not be assumed that the label will always provide the correct information, as there will always be situations where a label has been removed, or a substance has been placed into a bottle / container other than that in which it was supplied. Any apparently incorrect labelling must be investigated. Should further clarity regarding the contents be unavailable, the substance must be treated as an unknown.

In the event that a product can only be identified by a "Trade Name", then it will be necessary to use alternative methods of identification, such as discussion with the waste producer or contact with the manufacturer or supplier, all of who should be able to provide an MSDS. Additional data sources such as The Merck Index, Hawleys Condensed Chemical Dictionary, Sigma / Aldrich Catalogues or the Internet may also prove useful.

In the event that a substance cannot be identified from the available data sources, additional testing may be required in order to partially classify the substance. Field-testing will be limited to the use of test papers, including pH papers. Where this is insufficient, a formal sample should be obtained and an appropriate WDD form completed.

If a list has been provided by the waste producer as in scenario 1) or 3), the list must be verified when packing, unpacking or repacking.

In those instances where laboratory smalls have been packed by a qualified, trained chemist employed by Biffa prior to delivery to the Transfer Station, on-site verification can be restricted to opening the drums to check that the containers remain unbroken. Such drums must be accompanied by documentation confirming that the packing is subject to the requirements of this procedure.

In those instances where the waste producer has packed laboratory smalls, full checking and verification is required. Such verification will require the drums to be unpacked before the end of the working day, followed by immediate repacking once the verification checks have taken place. In all instances where the waste producer is packing their own laboratory smalls, they should be provided with a copy of this procedure.

Laboratory smalls can only be accepted on site when there are a minimum of 2 personnel on site. One of these must be a chemist and one must be a trained FLT driver.

Segregation

No chemicals are to be packed into the same drum, which would have the potential to initiate, propagate or catalyse a serious incident.

No chemicals are to be packed into the same drum, which would infringe the CDG/ADR Regulations.

No chemicals are to be packed into the same drum, which would infringe Biffa systems / policies / procedures.

In all three scenarios, once a full and detailed list has been obtained, the various chemicals must be segregated in such a way that incompatible substances are not packed together in the same container.

The segregation procedure is based around the ADR system. The main segregated groups (Packing Categories) can be summarised by reference to Table 1.

Table 1 is not an exhaustive list, but includes most wastes that will be encountered when dealing with laboratory smalls.

Other waste categories (particularly those of a reactive nature and in particular, those which have been assigned risk phrases 1-9, 14-19, 29-32 and 44 or hazard statements 230, 231, 240, 241, 242, 250, 251, 252, 260, 270 or 271), should be segregated, packed into suitable containers, and labelled using the most appropriate UN number. In the event of uncertainty, guidance should be sought from a Transfer Station Manager, the Wednesbury Technical Team or a qualified Biffa DGSA.

Substances that fall into one of the Packing Categories listed in Table 1, which in reality are not compatible with the majority of the substances in that category, should be identified and packed accordingly.

In the event of uncertainty, guidance should be sought from a Transfer Station Manager or a qualified Biffa DGSA.

Table 1

Packing Category	Generic UN Number	PSN	Max. Net Mass per Outer Package (metal/plastic)	Max. Inner Packaging Size	Comments
Inorganic Acidic liquids	3264	Corrosive liquid, acidic, inorganic NOS	250 kg	10 litres	
Organic Acidic liquids	3265	Corrosive liquid, acidic, organic NOS	250 kg	10 litres	
Oxidising Acidic liquids	3093	Corrosive liquid, oxidising NOS	250 kg	10 litres	
Acidic Solids	3260	Corrosive solid, acidic, inorganic NOS	400 kg	10 kg	
	3261	Corrosive solid, acidic, organic NOS			
Inorganic Alkaline liquids	3266	Corrosive liquid, basic, inorganic NOS	250 kg	10 litres	
Organic Alkaline liquids	3267	Corrosive liquid, basic, organic NOS	250 kg	10 litres	
Alkaline solids	3262	Corrosive solid, basic, inorganic NOS	400 kg	10 kg	
	3263	Corrosive solid, basic, organic NOS			
Ammonia solutions	2672	Ammonia solution	250 kg	10 litres	
Flammable liquids	1993	Flammable liquid NOS	250 kg	10 litres	
Flammable Toxic liquids	1992	Flammable liquid, Toxic NOS	250 kg	10 litres	
Flammable Corrosive liquids	2924	Flammable liquid, corrosive NOS	250 kg	10 litres	
Flammable solids	3178	Flammable solid, inorganic NOS	400 kg	10 kg	
	1325	Flammable solid, organic NOS			
Oxidising liquids	3139	Oxidising liquid NOS	125 kg	5 litres	
Oxidising Solids	1479	Oxidising solid NOS	125 kg	5 kg	
Organic Peroxides	3101-3110				Refer to P520 of ADR as packing requirements are variable
Neutral Inorganic Solids	3288	Toxic solid, inorganic NOS	400 kg	10 kg	
Neutral Organic Solids	2811	Toxic solid, organic NOS	400 kg	10 kg	
Neutral Inorganic Liquids	3287	Toxic liquid, inorganic NOS	250 kg	10 litres	
Neutral Organic Liquids	2810	Toxic liquid, organic NOS	250 kg	10 litres	
Mercury	2809	Mercury	400 kg	15 kg	Refer to P800 of ADR for specifics relating to combination packaging.
Agricultural Chemicals - liquids	2902	Pesticide liquid, toxic NOS	250 kg	10 litres	
Agricultural Chemicals - solids	2588	Pesticide solid, toxic NOS	400 kg	10 kg	
Inorganic Liquid Cyanides	1935	Cyanide solution NOS	250kg	10 litres	
Inorganic Solid Cyanides	1588	Cyanides, inorganic, solid NOS	400kg	10kg	
Iodine	3495	Iodine	400kg	10 kg	
Lead Acid Batteries	2794	Batteries, wet, filled with acid	Pallets, wooden crates, rigid outer packagings or 1 cubic metre battery boxes are authorised		Refer to P801 & P801a of ADR for full requirements
Dry unactivated alkali batteries	3028	Batteries, dry, containing potassium hydroxide solid	Pallets, wooden crates, rigid outer packagings or 1 cubic metre battery boxes are authorised		Refer to P801 & P801a of ADR for full requirements
Wet alkali batteries	2795	Batteries wet, filled with alkali	Pallets, wooden crates, rigid outer packagings or 1 cubic metre battery boxes are authorised		Refer to P801 & P801a of ADR for full requirements
Lithium Metal Batteries	3090	Lithium Batteries	30kg if non-UN approved packaging used. 400kg if Packing Group II packaging used.	N/A	Individual batteries shall be protected against short circuits. If outer package exceeds 30kg then it must conform to Packing Group II performance level. Used lithium cells and batteries not exceeding 500g each need not be individually protected if packaged in plastic clip top drums conforming to packing group II – however empty void in drum must be filled with cushioning material.
Lithium Ion Batteries	3480	Lithium Ion Batteries	30kg if non-UN approved packaging used. 400kg if Packing Group II packaging used.	N/A	
Aerosols	1950	Aerosols	55kg if fibreboard packaging used 125kg if packaging other than fibreboard used	N/A	Outer packaging shall be vented to prevent build up of pressure. Refer to P207 of ADR for full requirements. If large quantities of aerosols require collection, vented 800 Litre Waste-Safes may be used.
Alkali Metals	3208	Metallic substance, water reactive NOS	400kg	2kg	Inner packaging shall be hermetically sealed (e.g. by taping or by threaded closures).
Water Reactive Solids	2813	Water reactive solids NOS	Discuss with technical department		
Water Reactive Liquids	3148	Water reactive liquids NOS	125 kg	10kg	Inner packaging shall have threaded closures, and be surrounded in inert cushioning and absorbent material in a quantity sufficient to absorb the entire contents
Pyrophoric Liquids	3194	Pyrophoric liquid, inorganic NOS	150kg	4 litre (metal only)	See P400 of ADR for full requirements.
Pyrophoric Solids	3200	Pyrophoric solid, inorganic NOS	125kg	15kg (metal only) 1kg (glass only)	See P404 of ADR for full requirements.
Picric Acid	1344	Trinitrophenol (Picric Acid)	25kg	500g	Must be wetted with at least 10% water. Inner packagings should prevent the loss of water. Do not pack if dry as shock sensitive explosive when dry. Plastic drums only.

Packing

Before starting to pack laboratory smalls into any drum or other suitable outer packaging refer to the appropriate ADR Packing Method and Special Provisions for the substance to be packed, to ensure that the selected package is allowed. Table 1 lists the maximum net mass of a package, and the maximum inner package size for the identified Packing Categories; it also provides additional comments related to the content of any appropriate Special Provisions. This list is not exhaustive, and further checks should be made, where appropriate, to ensure compliance.

When processing laboratory smalls in the Transfer Station, all unpacking, verification and packing must take place within the dedicated laboratory smalls area. Once a drum has been filled, it should be appropriately labelled removed for storage within the appropriate dispatch bay (taking into account any segregation requirements).

When packing the laboratory smalls into drums, each bottle must be checked to ensure that it is intact, and that the lid is fully closed.

Any bottle / container lids that are not secure, or are missing, must be secured or replaced before packing. In the event that this is not possible, the bottle should be over packed or decanted into a replacement container if it is safe to do so (e.g. Picric Acid is a shock sensitive explosive when dry, it would therefore be unsafe to replace a screw lid if the substance was dry, in this instance guidance must be obtained). In the event of uncertainty, seek guidance from a Transfer Station Manager, the Wednesbury Technical Team or a qualified Biffa DGSA.

Each bottle must be placed into the drum, upright into a bed of non-combustible inert material (such as vermiculite, do not use shredded paper or sawdust as these are combustible and may react with certain substances), to cushion the bottles and prevent breakage during transit.

Do not lay any bottles on their sides.

Surround each bottle with packing material to prevent the bottles coming into contact with each other (a minimum of 10mm of cushioning should be used for all glass bottles).

Once a single layer has been placed in the drum cover the bottles with sufficient packing material to prevent the next layer of bottles coming into contact with the bottles in the first layer.

Build up several layers until the drum is full.

Never pack laboratory smalls loose into a Waste-Safe container. A Waste-Safe should only be used for the carriage of lab smalls if the bottles have first been packed, using the above method, into suitable drums, and those drums are then loaded into the Waste-Safe.

When unpacking and segregating laboratory smalls in a Transfer Station environment, it is acceptable to temporarily store items on an appropriate table to facilitate identification and sorting, but periodically i.e. before the table becomes overly crowded, and before the end of any one laboratory smalls processing session, all items must be listed and packed into the appropriate drum. It is not acceptable to leave items unpacked in the laboratory smalls area unless there are designated storage areas such as labelled shelving.

A list of the substances must be placed into the top of each drum before it is closed or attached to the outside of the drum in a waterproof pouch. This list must be dated, and include the description, volumes and quantities of all bottles / containers packed into the drum. This becomes especially important when packing for disposal at a Transfer Station as it aids compliance with the stock turnaround required by the Site Permit.

Further copies of these lists must accompany the Consignment Note when the load is collected.

Labelling

Each drum should be labelled for transportation, by reference to Chapter 3.2, Tables A & B of ADR 2019. Each drum will contain a mixture of different, but related substances, so it is likely that a UN number for a single substance will be inappropriate. It will therefore be necessary to identify an appropriate generic UN number as detailed in Sub-chapter 2.1.1 – 2.1.3 of ADR 2019.

Refer to Table 1 for details of the main generic UN numbers for the identified Packing Categories. Please note, this list is not exhaustive, Chapter 3.2, Tables A & B of ADR 2019 should be consulted when an additional Packing Category is identified.

Disposal

A list of disposal site requirements will be available for each segregated category, providing information on any restrictions, including those of a chemical nature e.g. the restriction of iodine compounds for disposal via incineration; and those relating to volume / weight of waste per container e.g. an incineration plant may want to restrict the volume of highly reactive compounds to no more than a few kilos per package to prevent uncontrolled violent reactions taking place during the incineration process.

Additional Information:

Qualified Dangerous Goods Safety Advisors

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