WASTE MANAGEMENT HANDBOOK

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Edited by the Environment Office

British Antarctic Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

THE BRITISH ANTARCTIC SURVEY
WASTE MANAGEMENT HANDBOOK

Update Procedures

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QUICK CHECK GUIDE TO WASTE MANAGEMENT

This is a summary guide only and lists the 'common' wastes generated at BAS Stations.
Please refer to the WASTE MANAGEMENT HANDBOOK for more details.
If in any doubt please contact the Environmental Manager at BAS, Clare Fothergill before consigning waste – thank you.

Waste Material (in alphabetical order)	Container	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	Comments
Aluminium & Steel Cans	FIBC	Green	Environmental Manager, UK.	"ALUMINIUM AND STEEL CANS" & recycling triangle	Rinse cans that have had food inside them.
Batteries - must be separated into (i) Lead acid (ii) Lithium (iii) Dry cell	Sturdy container preferably wood or fibre board	Yellow	Environmental Manager, UK.	"WASTE BATTERIES" Label the drum with the specific battery type, UN number and hazard class. Ensure terminals have been taped.	All types of batteries are to be returned to the UK for recycling. Please refer to Waste Management Handbook for specific packaging details. **Keep lithium batteries dry at all times.**
Cardboard	FIBC	Green	Environmental Manager, UK.	"CARDBOARD" & recycling triangle	Flat pack and bale.
Chemicals (Hazardous and non hazardous)	Reuse original containers if possible or UN approved container.	Yellow	Environmental Manager, UK.	Stencilled top and sides with "WASTE CHEMICALS" with appropriate UN number and hazard class.	All waste chemicals are to be returned to the UK. Please refer to the Waste Management Handbook for specific packaging details.
Clothing, Second Hand.	FIBC	Orange	Logistics Co-ordinator FI's -Pauline Sackett	"SECOND HAND CLOTHING FOR REUSE"	Good quality second hand clothing can be sent to the Seaman's Mission in the Falkland islands. Please ensure that the clothing is of a good quality and can actually be worn again.

QUICK CHECK GUIDE TO WASTE MANAGEMENT

Waste Material (in alphabetical order)	Container	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	Comments
Clothing (that can't be reused), fabric and rags.	FIBC or cardboard carton.	Green	Environmental Manager, UK.	Stencilled top and sides with "WASTE CLOTH/TEXTILES FOR RECYCLING" and recycling triangle.	Rags can be used in the workshop or separated and returned to the UK. Workshop rags are to be treated as oily waste once they have been used.
Food, - old dried, tinned or packaged ONLY.	Sturdy container	Yellow	Environmental Manager, UK	Stencilled top and sides with "UE" (Unconsumed Edibles).	**(SEE WMH FOR BASE SPECIFIC GUIDANCE ON THE DISPOSAL OF FRESH FOOD AND SCRAPS)**
Fuel (waste), MGO, Diesel, AVTUR, Petrol	Empty 205 litre AVTUR drum	Orange	Stanley Services Falkland Islands	"WASTE FUEL" Label the drum with the specific fuel and the appropriate UN number and hazard class.	Do not mix petrol with other fuels. Refer to the Waste Management Handbook for **UN numbers and hazard class.**
Glass (All bases except KEP)	Empty & clean 205l AVTUR drum	Green	Environmental Manager, UK.	"WASTE GLASS" and recycling triangle.	At the current time (2013) different colours of glass can be mixed together.
Glass (KEP only)	FIBC	Orange	Public works Department FI's	"WASTE GLASS" and recycling triangle.	Imploded glass is reused as aggregate in the FI's.
Hazardous Waste General (for other hazardous materials plse refer to Mick Cliff)	(See Waste Management Handbook)	Yellow	Environmental Manager, UK.	(See Waste Management Handbook) **For advice on packaging hazardous materials other than waste please contact Mick Cliff mpc@bas.ac.uk**	**There are a multitude of waste items which are considered to be hazardous either for transportation and/or disposal. Please refer to the Waste Management Handbook for the appropriate packaging, UN numbers and Hazard Class.**

Waste Material (in alphabetical order)	Container	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	Comments
IT equipment **(for other electrical items see WEEE)**	Sturdy container – can be a re-useable nefab.	No paint required – treat as normal cargo	Roy Dodson, BAS Cambridge	Do not label as waste – consign to Roy Dodson.	BAS computers and printers should be consigned to the IT department in Cambridge for security clearance prior to final disposal.
Light bulbs – Tungsten (the old fashioned style)	Sturdy cardboard or wooden box	Orange	Interserve Falklands Islands	Stencil top and sides with "WASTE FOR LANDFILL"	
Light bulbs – Fluorescent tubes & low energy bulbs	Sturdy cardboard or wooden container	Yellow	Environmental Manager, UK.	Stencil top and sides with "WASTE FLUORESCENT TUBES/LOW ENERGY BULBS"	Fluorescent tubes and low energy bulbs contain mercury and must be disposed of carefully. Please see the WMH if you are dealing with a broken bulb.
Metal, scrap	Pallets (preferable) /empty & clean 205l drum/skips	Orange	Interserve Falklands Islands	Stencilled top and sides with "WASTE SCRAP METAL"	**Segregate ferrous and non ferrous where possible**. Complete a WTN and send to FI Logistics co-ordinator.
Oil, cooking	Empty 25 AVTUR litre drums	Orange	Stanley Services Falklands Islands	Stencilled top and sides with "WASTE COOKING OIL"	
Oily rags, used oil spill absorbents	See Section 7.12.5 for base specific guidance				
Oil filters	Empty 25 litre AVTUR drums	Green	Environmental Manager, UK.	Stencilled top and sides with "OIL FILTERS" and recycling triangle.	

Waste Material (in alphabetical order)	Container	Colour Code	BoL Consignee	Stencil (please mark the top and sides of the containers clearly)	Comments
Plastics	FIBC	Green	Environmental Manager, UK.	"PLASTICS" & recycling triangle	Rinse all containers. CD's, DVD's & polystyrene and polythene foam can be recycled if separated from other plastics.
Resale Items	Any	No paint required	Logistics Co-ordinator FI's -Pauline Sackett	Do not label as waste - consign to Pauline Sackett	Only items which are in good working order should be sent to the FI for resale. Please contact Pauline **prior** to sending items to ensure that it is suitable for resale.
Rope	FIBC or any sturdy container.	Green	Environmental Manager, UK.	Stencilled top and sides with "ROPE FOR RECYCLING" & recycling triangle	
Tetra packs	FIBC	Green	Environmental Manager, UK.	"TETRAPACKS" and recycling triangle	Rinse before storing.
Toner and Inkjet cartridges	Cardboard or wooden box	Green	Environmental Manager, UK.	Stencilled top and sides with "WASTE TONER CARTRIDGES" and recycling triangle	
Waste electrical and electronic equipment **(WEEE)** (including electrical cables) **N.B. PLEASE SEE ABOVE FOR BAS IT EQUIPMENT**	Sturdy container preferably wood or fibre board	Yellow	Environmental Manager, UK.	"WEEE WASTE" and recycling triangle. WEEE should **always** be stored indoors to avoid polluting local water courses or the surrounding environment.	All WEEE should be returned to the UK for recycling or disposal. This includes fridges & freezers. If you have an item of electronic/electrical equipment (**other than IT**) which is in good working order contact Pauline Sackett in the FI to establish if it can be resold.

Section 1

INTRODUCTION

1 INTRODUCTION

1.1 Purpose of the BAS Waste Management Handbook

The purpose of this handbook is to provide BAS staff with practical guidance on the handling, packaging, consignment and disposal of waste generated in the Antarctic. It covers all aspects of BAS operations, including the research stations (Rothera, Halley, Signy, Bird Island and King Edward Point), field camps (Sky Blu, Fossil Bluff and temporary seasonal camps) and ships (RRS Ernest Shackleton and the RRS James Clark Ross).

Wastes are listed individually in Sections 6 and 7 to provide clarity on the correct handling procedures and to reinforce the importance of packaging and consigning waste appropriately.

1.2 BAS Waste Management Policy

The BAS Waste Management Policy in the Antarctic is:

- to minimise waste in the first instance;
- reuse and recycle at source where possible; and
- to remove all wastes other than sewage, grey water or food waste from the Antarctic for reuse, recycling or final disposal.

The dumping of waste (including chemicals) on land or at sea is prohibited in Antarctica, as is the open burning of rubbish. Wherever possible waste is separated at source, processed (e.g. compacted, crushed or imploded), packaged and then shipped out of the Antarctic for disposal. Waste is transported from BAS stations to the FI or the UK on board the RRS Ernest Shackleton or the RRS James Clark Ross.

1.3 How to use this handbook

All BAS staff should use this handbook to ensure that the correct procedures are followed when dealing with waste generated at any of the BAS bases or ships. The success of the BAS Waste Management Policy is reliant on the enthusiasm, cooperation and diligence of individual staff members to follow the advice provided in this handbook.

This document is reviewed annually prior to the start of the Antarctic summer season by the BAS Environment Office. Any errors or amendments within the text and suggestions or recommendations on how to improve waste management procedures should be directed to the Environmental Manager.

A ‘Quick Check Guide to Waste Management’ is included at the front of this document as a summary guide only. This should be used in conjunction with the Waste Management Handbook which provides comprehensive detail on waste handling, packaging and disposal.

If a waste material is not listed in this handbook or if further clarification is required on waste disposal all enquiries should be directed to the Environmental Manager at BAS Cambridge, Clare Fothergill at clathe@bas.ac.uk.

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Section 2

LEGISLATION

2 LEGISLATION

2.1 Antarctic Environmental Legislation

To ensure the protection of the Antarctic environment, the Antarctic Treaty nations adopted the Protocol on Environmental Protection to the Antarctic Treaty in 1991. The UK enforces the provisions of the Protocol through the Antarctic Act, 1994, and the Antarctic Regulations, 1995. Following the guidance provided in this document will ensure that BAS complies with the requirements of the Protocol and other national and international legislation listed below.

2.1.1 Annex III: Waste Disposal and Waste Management

Annex III of the Environmental Protocol sets out regulations both for waste management planning and disposal of wastes (see Appendix 1). The Annex obliges all operators to reduce the quantity of waste produced and or disposed of in Antarctica in order to minimise any impact on the environment. Emphasis is placed on the storage, disposal and removal of waste from the Antarctic Treaty area, as well as recycling and source reduction.

BAS complies with the requirements of the Annex by means of conditions attached to the Operating Permit granted by the Foreign and Commonwealth Office.

2.1.2 Annex IV: Prevention of Marine Pollution

Within the Antarctic Treaty Area (south of 60^{o}S latitude) the discharge of all toxic and noxious chemicals, oil and oily wastes, plastics and other forms of non-biodegradable rubbish into the sea is prohibited. Annex IV largely parallels the international regulations controlling ship-generated pollution under MARPOL 73/78.

2.1.3 MARPOL 73/78

Since 1992, the Antarctic Treaty Area has been designated by the International Maritime Organisation (IMO) as a Special Area under Annex I (Oil) and Annex V (Garbage) of MARPOL 73/78 (Revised 2013). This means that the discharge of any oil or oily mixture, bulk chemicals or garbage from a ship is prohibited in Antarctica. Most waste, other than food and sewage, is discharged at port reception facilities outside the Special Area.

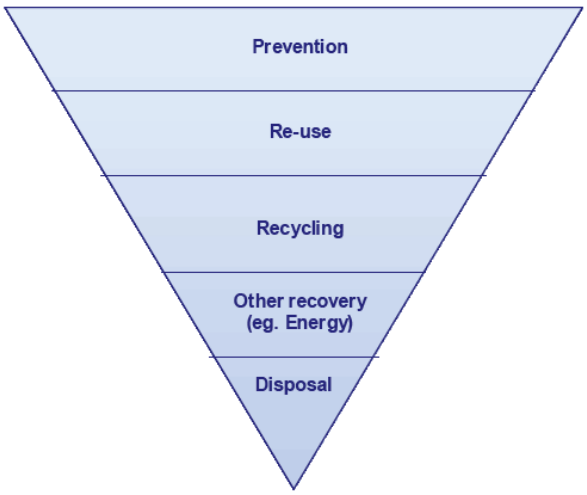
BAS avoids the intentional discharge of processed bilge water from machinery spaces containing oily mixtures whilst in Special Areas. However, when there is a requirement to do so, and if the requirements of MARPOL are met, this is allowed in consultation with the Designated Person Ashore and the Senior Environmental Manager.

Both BAS vessels the RRS Ernest Shackleton and the RRS James Clark Ross, maintain a garbage disposal record book, as required under MARPOL. Copies are provided to the BAS Environmental Manager in May/June each year. A copy of the *Marine Standing Instruction MSI/Gen/21 Bilge and Garbage Disposal* is held on both ships and should be referred whilst on board.

2.2 UK Environmental Legislation

2.2.1 Waste (England and Wales) Regulations, 2011

The Waste Framework Directive, which is the primary European legislation for the management of waste, is implemented through the Waste (England and Wales) Regulations 2011. It places great emphasis on the waste hierarchy to ensure that organisations deal with waste in the priority order of:



The waste hierarchy is partly implemented through the amended Duty of Care regulations.

2.2.2 The Duty of Care Regulations, 1991

Under the Environmental Protection (Duty of Care) Regulations, 1991, BAS is required to take all reasonable steps to keep its waste safe and secure so that it does not cause pollution or injury.
In particular, BAS must:

- Fulfil the legal requirement to apply the waste hierarchy.
- Ensure safe and correct packing and containment. This is of particular importance while the waste is in transit.
- Check that waste contractors are appropriately registered with the Environment Agency.
- Describe the waste on a Duty of Care transfer note so that the waste carrier can avoid committing an offence under the Regulations. An

example of a completed Duty of Care transfer note is shown in Section 4.4.

Failure to comply with the Duty of Care Regulations is a criminal offence, and could result in a fine of an unlimited amount. The Environment Office is responsible for compliance with the Environmental Protection (Duty of Care) Regulations, 1991 with regard to wastes returned by BAS from Antarctica for disposal in the UK.

2.2.3 The Hazardous Waste Regulations, 2005

Hazardous wastes are amongst the most harmful and difficult wastes to deal with. The Hazardous Waste Regulations 2005 control the licensing, transfer and disposal of such waste in the UK. The main elements of these regulations which BAS must comply with are:

- registration with the Environment Agency as producers of hazardous waste; and
- preparation of consignment notes for every movement of hazardous waste in the UK.

BAS is registered under the Hazardous Waste Regulations. The registration number is NER045. The Senior Environmental Manager is responsible for compliance with the Hazardous Waste Regulations, for hazardous waste being returned by BAS from Antarctica which is disposed of in the UK.

Section 3

PROCEDURES & RESPONSIBILITIES

3 PROCEDURES AND RESPONSIBILITIES

3.1 BAS Waste Management Procedures

Waste management procedures vary slightly at each BAS station. However the waste hierarchy (See Section 2.2.1) should be applied wherever possible to ensure that the best environmental option for waste has been sought.

3.1.1 Reduce

In the first instance all efforts should be made to minimise waste. All BAS staff should consider the following points**:**

- Remove excess packaging from personal effects and scientific equipment before leaving for Antarctica.
- When ordering equipment, consider the actual quantities required. Do not over order.
- Use rechargeable batteries for personal electronic items (e.g. stereos, shavers etc.) and for scientific purposes where possible.
- Reuse scrap paper.
- Break down cardboard boxes and reuse as packaging material.
- Open wooden crates and boxes with care so that they can be reused.
- Reuse timber and scrap metals where possible.

3.1.2 Reuse

Where possible, items should be reused on base. Certain items which are reusable and are in good working condition but are surplus to requirement should be sent to the FI for resale. Please contact the FI Logistics Co-ordinator prior to consigning reuse items. This includes construction materials, scrap metal, electrical equipment and surplus furniture. This does not include food.

The goods must have marketable value and the budget holder responsible for the purchase of those goods must approve the disposal. Before the goods are offered for resale, they should be offered to other BAS stations and ships. For further advice, contact the Logistics Co-ordinator for the FI.

Items which are broken such as fridges and freezers should be sent back to the UK (as hazardous WEEE waste) for appropriate disposal.

3.1.3 Recycle

Over 85% of BAS waste generated on station is currently recycled, either in the FI or in the UK (2012). To maintain this recycling rate it is essential that waste is segregated at source. Each base is provided with Flexible Intermediate Bulk

Bags (FIBCs) to enable recyclables to be stored separately. These include paper, card, cans, tetra-paks, plastics and glass.

3.1.4 Disposal

Whilst each BAS station has slightly different waste management procedures dependent on the specific waste arising, waste disposal can generally be categorised as per Table 1 below. For more specific details please see Sections 6 and 7.

Table 1. Disposal Options

Waste Type	Specific Items	Disposal Location
Recyclables	Paper, Card, Aluminium & Steel Cans, Tetra-paks, Plastic, Textiles, Glass (all bases apart from KEP), Oil Filters, Rope.	UK for recycling
Hazardous	Lab Chemicals, WEEE, Anti-freeze, Batteries, Paints, Glue, Photo chemicals Radioactive waste, Medicals Sharps.	UK for appropriate disposal by licensed contractor (which may include recycling options)
Fuels and Oils	Any waste fuels and oils including cooking oil	FI for reuse
General Waste	Items which cannot be reused or recycled and are non- hazardous	FI for landfill
Reusable items	Empty AVTUR drums Items in good working order no longer required on base	FI for reuse or resale
Biodegradable	Food, sewage sludge, human field waste	Dealt with on base either by incineration or local disposal

Under no circumstance should Antarctic waste be consigned to Cambridge.
BAS does not have a licence to receive imported waste at Cambridge. Waste to be sent to the UK should be consigned to the Environment Manager – "UK" (not Cambridge).

3.2 BAS Waste Management Responsibilities

The BAS Environment Office develops the Environmental and Waste Management Policy in conjunction with a range of BAS staff. This is largely via working groups involved in the planning of BAS activities in Antarctica but may also be guided by feedback from individual staff members. Whilst certain roles have specific waste management responsibilities, all BAS staff are expected to be proactive when dealing with waste.

3.2.1 Staff Responsibilities

- All Staff
  All staff have a responsibility to ensure that they dispose of waste in the most appropriate manner when working at a BAS station or in the field. This will involve minimising waste where possible, segregating items and ensuring waste is clearly marked for identification prior to disposal.

- Ship's Master
  On board the BAS ships the Master has overall responsibility for ensuring that the waste management procedures comply with the Antarctic Treaty Regulations and the procedures outlined in this handbook.

- Chief Officers (CO)
  CO's are responsible for consigning waste appropriately and maintaining the garbage disposal record book as required by MARPOL. The Chief Officer of the ship receives the BOL for all waste **prior** to the waste being loaded. The CO should also notify the FI logistics Co-ordinator of any waste consignments which may get offloaded in the FI.

- Senior Shipping Officer
  Co-ordination of all shipping documentation relating to waste is the responsibility of the Senior Shipping Officer. The Senior Shipping Officer also receives the BOLs for all waste **prior** to the waste being loaded.

- Cambridge Stores Manager
  The Cambridge Stores Manager advises on the correct packaging and transportation requirements of all hazardous materials including waste.

- Base Commanders (BC's)
  BC's have overall responsibility for waste management on station. They must ensure that all staff are appropriately briefed on waste procedures whilst living on station and that resources are available for waste to be collected and stored appropriately.

  The BC is responsible for ensuring that the correct shipping documentation has been completed for all waste consignments. The BC must email copies of all waste BOLs to the Senior Shipping Officer and the Chief Officer prior to loading the ship.

The BC is responsible for ensuring that Waste Transfer Notes (WTN) are completed for waste that will be disposed of by Interserve in the Falkland Islands. The WTN must be sent to the FI Logistics Co-ordinator and the Chief Officer prior to loading the ship,

- Base General Assistants (GA's)
  At Halley and Rothera the Base GA's are responsible for the day-to-day operation of the station waste management system. This will involve segregation, crushing, compaction, storage and packaging of waste which includes the operation of the incinerators and other waste management equipment. However GA's are not responsible for clearing up other people's mess.

- Doctors
  Doctors are responsible for the correct storage and packaging of all clinical wastes. During the winter the doctors take on the same waste management responsibilities that the Base GA's undertake during the summer season.

- Domestic Assistants and staff on Gash duty
  At Halley and Rothera most staff will be included on a 'gash' duty rotation at some point during a station visit. This will involve among other tasks emptying rubbish bins and segregating the waste into the appropriate storage locations managed by the Base GA's.

- Field Operations Manager
  All field parties from Rothera will be required to segregate waste and return it to station. This includes human waste. The Field Operations Manager is responsible for ensuring that all field parties are issued with the appropriate field toilets and waste segregation bags.

- Field Assistants (FA's)
  Waste management in the field is the responsibility of all team members. Field Assistants should ensure however that the appropriate bags and containers have been supplied and that effective segregation of waste is being undertaken. On return from the field the FA's at Rothera are responsible for delivering waste bags and honey pots used for human waste to the Miracle Span for the Base GA's to deal with.

- Principle Scientists
  Principle Scientists are responsible for completing BOLS for hazardous laboratory waste or scientific hazardous waste generated in the field. These should be forward to the BC prior to the waste being loaded on the ship. For scientific hazardous waste generated on the ship the Principle Scientist should liaise with the Chief Officer.

- Mechanics
  Mechanics are responsible for segregating, packaging and labelling garage wastes such as oils and fuels, fuel contaminated absorbants, oily rags and oil filters.

- Environmental Manager
  The Environmental Manager is responsible for ensuring that the waste consigned to the UK is received, handled and disposed of appropriately by a registered waste contractor.

  The Environmental Manager also ensures that BAS is registered under the Hazardous Waste regulations to legally transfer hazardous waste from the Antarctic and informs the Environment Agency of any shipments of waste to the UK. The Environmental Manager revises and issues the Waste Management Handbook each year and advises BAS staff on day to day waste management issues.

- FI Logistics Co-ordinator
  The FI Logistics Co-ordinator ensures that the waste consigned to the FI is disposed of appropriately and that WTNs are forwarded to Interserve.

- Bonner Lab Manager
  The packaging, labelling and completion of shipping documentation for hazardous waste generated in the Bonner Lab is co-ordinated by the Bonner Lab Manager.

Section 4

PACKING, LABELLING, TRANSFER & SHIPPING DOCUMENTATION

4 PACKING, LABELLING, TRANSFER & SHIPPING DOCUMENTATION

It is essential that waste materials are securely packaged, are clearly marked and have the appropriate documentation attached. The following procedures should be followed to ensure consignments are safe for handling and are transported according to legal requirements.

4.1 PACKING

4.1.1 What not to use!

A variety of re-usable boxes are employed for transporting cargo to BAS stations. These should be opened and handled carefully so that they can be re-used for **cargo**. These include collapsible plastic 'nefab' boxes, aluminium 'zarges' boxes, other collapsible plastic boxes and blue food boxes. They should **not** be used for packing waste under any circumstance.

All containers used for transporting waste must be in good condition and appropriate to the contents. The Chief Officer will refuse to load leaking, damaged or suspect containers.

4.1.2 Containers

BAS uses a variety of containers for packing waste as listed below in Table 2. Please see Sections 6 & 7 for advice on packing and labelling specific waste materials.

4.1.3 Skips

Skips should be ordered by the Base Commanders through the FI Logistics Co-ordinator prior to the summer season. It should be noted that there are a limited number of skips available for hire in the FI. In addition this season there are a reduced number of lorries which can collect skipped waste from the dockside. Where possible, use pallets and other containers instead of skips.

4.1.4 Packaging Materials

Packaging materials that have been sent in containers carrying items to bases should be reused as much as possible. For example:

- Vermiculite (for all liquids);
- Shredded paper;
- Bubble wrap; and
- Cardboard.

Table 2. Containers

Type of Waste	Container	Waste
Non- Hazardous Waste	• Flexible Intermediate Bulk Bags (FIBCs) - **With green recycling logo**	Segregated dry recyclable waste (e.g. paper, card, plastics, cans, tetra-pak etc)
	• Flexible Intermediate Bulk Bags (FIBCs) - **With orange 'FI' lettering**	Waste materials for landfill
	FIBC's should not be used for general cargo!	
	• Old 205 litre AVTUR drums	Oil filters, cooking oil, glass
	• Pallets	Wood waste and scrap metal
	• Skips	Scrap Metal (but preference is on a pallet where possible)
Hazardous Waste	• Old 205 litre AVTUR drums	Waste fuel (not petrol), lubes and oil, oily rags
	• Old Petrol drums	Only for waste petrol
	• Wooden containers and crates (lined with plastic)	Fluorescent light bulbs & WEEE
	• UN approved boxes	Batteries, aerosols, empty paint containers
	• UN Approved 25l, 30l, 60l metal and plastic drums	Waste Chemicals
	• Yellow Griff Bins	Clinical Waste

4.1.5 Packing Groups and UN Approved Packaging

All hazardous waste must be packed in correct Group I, II or III packing containers (see Appendix 3). The packing groups are based on the degree of danger associated with the material.

Packing Group I	Materials are highly dangerous
Packing Group II	Materials are of medium danger
Packing Group III	Materials are of low danger

All enquiries for general hazardous materials packaging and transportation should be directed to Mick Cliff mpc@bas.ac.uk at BAS, Cambridge.

UN approved packaging guarantees the item has been tested to ensure that the contents will not leak when under pressure, in a stack or when dropped. All UN approved packaging bears the UN mark of approval.

4.1.6 Packing Hazardous Waste

Liquids

Hazardous liquid wastes are generally transported in UN approved 25, 30 or 60 litre chemical drums. Check the drums for leaks and that the seals on caps are intact. Be particularly vigilant when using dented or rust-marked drums.

Solids

UN approved cartons or crates should be used to return solid hazardous waste or small bottles containing hazardous liquids.

All contents must be sealed in a heavy gauge plastic liners and sufficient vermiculite to protect the contents and absorb any spillage. Do not overload boxes or cases.

A copy of the Bill of Lading (BOL) See Section 4.2, sealed in a plastic wallet must be securely taped to the outside of any container containing hazardous wastes. The following should be considered when packing hazardous waste:

- previous hazardous cargo labels and markings must be removed or painted over (not just crossed out);
- do not paint over container dimensions or UN marking (shown above);
- all sides (except the bottom) of the package must be labelled;
- all sides (except the bottom) must have the appropriate hazard class labels; and
- top and upper part of containers should be painted yellow.

4.1.7 Manual handling

All waste is man-handled several times over, from when it is first disposed of and packaged on base, to being loaded onto BAS vessels in the Antarctic, offloaded in the UK or FI, loaded onto waste contractor lorries and then offloaded at its final disposal point.

It is essential therefore to pack waste appropriately to avoid injury to those handling it. The following points should be considered by anyone involved in packing waste:

- FIBC's should be checked prior to being hoisted by crane onto BAS vessels to ensure that they do not contain sharp objects which may injure handlers or tear bags;
- Boxes and crates must be in good condition and not overloaded;
- Waste loaded onto pallets should be carefully packed to ensure there are no sharp edges and that protruding nails or screws are removed;

- Old fuel drums should be fully drained and wiped with absorbents to ensure no vapours or liquid remains;
- Drums should not be over-filled as they become too heavy for people to easily handle;
- When storing liquids in drums, space should be allowed for expansion at warmer temperatures; and
- Drums that have been fitted with a lid and ring clamp must not be lifted using drum lifting clamps; instead they should be netted when loaded by crane.

4.1.8 Storage

It is extremely important that waste ready for shipment is stored appropriately i.e. according to the hazard it may create. This could be inside the designated waste store, in an ISO container, or outside on the dockside. See Section 6 and 7 for specific details on individual waste materials.

If waste is stored outside it must be secured in case of strong winds (in particular empty drums), and properly sealed to prevent ingress of water.

Hazardous wastes must be kept in the designated storage facilities on base. Drums should always be stored upright in designated waste stores on the stations and ships.

N.B. Lithium Batteries are a FIRE HAZARD when wet and must be kept dry at all times!

4.2 LABELLING

Every consignment of waste must be appropriately colour coded and clearly marked with the type of waste it contains. In addition each consignment must have a BAS case number. See Section 4.3 Shipping Documentation for further details.

For hazardous waste the cases must also be marked on the outside with the following information:

- Proper shipping name (PSN)
- UN hazard class label(s)
- Flashpoint (if applicable)
- UN number

This information can be found listed in Appendix 3 for chemicals used on BAS stations. As an example, a drum containing waste methanol/water mixture would be recorded as:

- ***waste methanol mixture (methyl alcohol) / water >70%***
- ***hazard class 3***
- ***flashpoint 20°C***
- ***UN No 1230***

If the waste has a primary hazard and a subsidiary risk (see Appendix 3), then both hazard labels must be stuck onto the package.

The *Approved Carriage List* (Health and Safety Executive, 1994), available on stations and ships, contains a comprehensive listing of chemicals and hazardous substances.

4.2.1 Colour Coding

All containers carrying waste should be colour coded to reflect the final disposal location and waste contractor. For solid containers this will involve painting the tops and upper part of the sides of the unit. FIBC's are generally ready supplied with a colour code in the form of a green recycling logo or with orange 'FI' lettering on the side. **All old labels and hazard markings for any previous contents must be removed or painted over.**

Table 3. Colour Coding

Type of Waste	Colour Coding	Disposal Location
Non hazardous landfill	Orange	Falkland Islands
KEP only – waste glass	Orange	Falkland Islands
Fuels and oils	Orange with recycling logo	Falkland Islands
Resale items	No colour	Falkland Islands
Recyclables	Green plus recycling logo	UK
Hazardous waste, radioactive & other chemicals	Yellow	UK

4.2.2 Hazard Classification

Hazardous wastes must be carried in accordance with the *International Marine Dangerous Goods (IMDG) Code*. This covers the carriage of dangerous goods at sea. It is the Chief Officer's responsibility to ensure that the regulations are followed onboard ship. Hazardous materials must be separated into nine different general classes based on the United Nations (UN) hazard classification.

The general classes and subclasses are as follows:

Table 4. Hazard Classification

Hazard Class	Class Description
Class 1	Explosive
Class 2.1	Flammable gas
Class 2.2	Compressed gas (non-flammable, non-toxic)
Class 2.3	Toxic gas
Class 3	Flammable liquid *
Class 4.1	Flammable solid
Class 4.2	Spontaneously combustible
Class 4.3	Dangerous when wet
Class 5.1	Oxidising agent
Class 5.2	Organic peroxide
Class 6.1	Toxic
Class 6.2	Infectious substance
Class 7	Radioactive material
Class 8	Corrosive
Class 9	Miscellaneous substance
* Packing Groups for flammable liquid:	
I	Flammable liquids - flash point below -18°C
II	Flammable liquids - flash point -18°C up to +22°C
III	Flammable liquids - flash point +23°C up to +61°C

All hazardous cargoes shipped into BAS stations are identified by one of the UN hazard classes. Check the Materials Safety Data Sheet (MSDS) for information on how to pack and transport the cargo appropriately.

If chemicals of the same class are mixed a list should be attached to the container identifying the approximate volumes of each different chemical it contains.

NEVER mix substances with different UN hazard classes.
This is highly dangerous.

SPECIAL ATTENTION MUST BE GIVEN TO ENSURE THAT OXIDISING AGENTS (HAZARD CLASS 5.1) ARE KEPT SEPARATE FROM OTHER CHEMICALS.

Acids and Alkalis (hazard class 8) are not to be packed in the same outer packaging or stowed in the same container. They must be clearly labelled in separate containers.

4.2.3 Case Numbers

Case numbers are usually assigned by the BC or Chief Officer. These numbers should be marked on each side of the consignment for ease of handling when loading and offloading the waste. Case numbers are **not** required for waste sent for disposal in FI but they **are** required for resale items for the FI. Resale items do not need to be colour coded.

4.3 SHIPPING DOCUMENTATION

4.3.1 What is a Bill of Lading (BOL)?

All waste sent out from BAS research stations and ships must be accompanied by an accurate Bill of Lading (BOL). BOLs are the principal documentation for waste removed from Antarctica. They are primarily used to ensure goods are loaded and transported appropriately and discharged in the correct location.

In addition the BOL's for waste are used to agree waste disposal contracts, verifying disposal invoices, auditing the BAS waste management system and monitoring the quantity of waste that is produced by BAS in Antarctica. **Waste data has to be reported to the Antarctic Treaty Parties, HM Treasury, NERC and the BAS Board.** It is therefore essential that the information provided on the BOL is complete, accurate and dated.

BOL's must be prepared by the person who is responsible for the waste, in conjunction with the BC on the stations or the Chief Officer on the ships.

BOLs for major construction activity need to specify which project the waste arisings originated from so that these records can be attributed to the correct project.

Each base has been provided with a pallet truck which has built in scales. Standard weights and volumes for use on BOL's are shown below. These should be used **only** in the absence of weighing or measuring facilities. **It is important that the weights and volumes are as accurate as possible.**

Table 5. Weights & Volumes

Waste	Volume (m^3)	Weight (kg)
Empty 205 litre drum	0.3	20
205 l. drum (fuel, seawater) part fill only	0.3	185
Full 25 l. drum	0.04	30
Crushed drum 205 l drum	0.065	20
ISO-container empty	25.0	As per tare plate on container
ISO-container full (crushed drums)	25.0	14,500
Skips	6	-
Small FIBC	0.5(max)	Dependant on contents
Large FIBC	0.75(max)	Dependant on contents

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4.3.2 Completing a BOL

Examples of completed BOLs for both non-hazardous waste and hazardous wastes are shown at the end of this section.
The following information is required on all waste BOLs:

- Date
- Consignor
- Consignee
- Station/vessel generating waste
- Vessel used for transportation of waste
- Special stowage instructions (if applicable)
- BOL number
- Quantity and type of package
- Full description of contents
- Case/drum number (new number for each individual item; not required for wastes off-loaded in FI)
- Case dimensions (cm)
- Weight (kg)
- Volume (m^3) per item
- Estimated value (if applicable)

Under no circumstance should Antarctic waste be consigned to Cambridge. BAS does not have a licence to receive imported waste at Cambridge. Waste to be sent to the UK should be consigned to the Environment Manager – "UK" (not Cambridge).

4.3.3 Submitting a BOL

Before loading waste onto a ship, the BC must e-mail copies of the relevant BOLs to the Senior Shipping Officer at BAS, Cambridge and to the Chief Officer of the BAS vessel taking the waste.

The Chief Officer must notify the BAS FI Logistics co-ordinator of details of the incoming waste shipment to the Falkland Islands. Wherever practicable, the FI Logistics Co-ordinator must inform the contractors of the types and quantities of waste to be off-loaded at least three working days prior to collection and haulage in the FI.

The Senior Shipping Officer ensures that copies of the waste BOLS being consigned to the UK are provided to the Environmental Manager. The Environmental Manager then informs the contractor of the waste to be offloaded in the UK.

4.3.4 BOLs for hazardous wastes

A BOL must be prepared for each individual case/drum of hazardous waste. However, there may be times when large numbers of drums of identical size and content may be included together on one single BOL. Contact the Senior Shipping Officer in advance if you plan to include more than one drum on a BOL.

The information listed in Section 4.2 must be included on a hazardous waste BOL. Please see the example BOL for hazardous waste Section 4.3.6.

All enquiries for general hazardous materials packaging and transportation should be directed to Mick Cliff mpc@bas.ac.uk at BAS, Cambridge.

4.3.5 Example BOL for non-hazardous wastes

BILL OF LADING – NORTHBOUND

BRITISH ANTARCTIC SURVEY High Cross, Madingley Road Cambridge CB3 OET Tel: Cambridge 01223 221400 Fax: Cambridge 01223 362616		**CASE NO**	**R/C/12/9028**
		DESTINATION	**BAS - UK**
		DIVISION	
		VESSEL	**Ernest Shackleton**
		CASE TYPE	**UN Fibreboard Box**
STATION:	**Rothera**	**DIMENSIONS CMS:**	**L: 40 W: 40 H: 45** **CMS**
SECTION REF:		**CUBE**	**0.07** **CU M**
CONSIGNEE:	**Environmental Manager**	**WEIGHT**	**25** **KGS**
CONSIGNOR:	**Ali Massey**	**DATE**	**02/02/2013**
Please indicate if goods are hazardous. If "yes" specify Haz Class and U.N. No with description of goods. NO	YES	Please indicate of goods require special stowage If yes specify details with description of goods	YES NO

Order Number	Item number	Detailed description of ALL goods including Haz Class, UN No's, if applicable. A safety data sheet for any hazardous items must be appended.	Part Number	Quantity	Line cost
		Box of assorted waste batteries *(Dry-cell, non-hazardous)*		*1*	
VALUE:	**£0**	**TOTAL WEIGHT / CUBE:**		**25**	**0.07**

4.3.6 Example BOL for hazardous waste

BILL OF LADING - NORTHBOUND

BRITISH ANTARCTIC SURVEY High Cross, Madingley Road Cambridge CB3 OET Tel: Cambridge 01223 221400 Fax: Cambridge 01223 362616		**CASE NO**	**R/C/12/9924**
		DESTINATION	**BAS - UK**
		DIVISION	
		VESSEL	**Ernest Shackleton**
		CASE TYPE	**25L UN Drum**
STATION: **Rothera**		**DIMENSIONS:**	**L: 28 W: 28 H: 50 CMS**
SECTION REF:		**CUBE:**	**0.039 M^3**
CONSIGNEE: **Environment Manager**		**WEIGHT**	**25 KGS**
CONSIGNOR: **Ali Massey**		**DATE**	**01/02/20123**
Please indicate if goods are hazardous. If "yes" specify Haz Class and U.N. No with description of goods.		Please indicate of goods require special stowage If yes specify details with description of goods	YES NO

Order number	Item number	Detailed description of ALL goods including Haz Class, UN No's, if applicable. A safety data sheet for any hazardous items must be appended.	Part Number	Quantity	Line cost
	1	***HAZARDOUS GOODS*** *Waste Photochemicals* *25L* *CORROSIVE LIQUID, N.O.S* *(PHOTOGRAPHIC PROCESSING KIT)*		*1*	*0*

INFORMATION REQUIRED TO CONFORM TO IMDG/IATA/ ADR REGULATIONS

UN NO:	*1760*
FLASH POINT °c	*n/a*
PROPER SHIPPING NAME:	*WASTE CORROSIVE LIQUID, N.O.S. (POTASSIUM HYDROXIDE 2-5%)*
MARINE POLLUTANT:	*Yes*
PACKING GROUP:	*I*
CLASS:	*8*
SUB CLASS:	*n/a*
NO INNER PACKS:	*n/a*
NETT WEIGHT PER PACK:	*23kg*
GROSS WEIGHT:	*25kg*
INNER PACKAGING:	*n/a*
OUTER PACKAGING:	*UN 25L Drum*

VALUE:	**£0**	**TOTAL WEIGHT / CUBE:**	**25**	**0.04**

4.4 DOCUMENTATION FOR INTERSERVE

4.4.1 Waste Transfer Notes

As of 2013, each consignment of waste being sent to Interserve in the Falkland Islands must be accompanied by a Waste Transfer Note (WTN). This is a legal requirement to meet the Duty of Care Regulations (See Section 2.2.2) which the producer of waste (BAS) and the receiver of waste (Interserve) must complete. **Only inert, non-recyclable, non-hazardous waste should be sent to Interserve.**

An example of a completed WTN is shown in Section 4.4.2. The following information should be included on each form.

Section 1 - Waste Details:

Choose the relevant details from the table below to complete Section 1 of the form. Only one type of waste should be listed on each WTN.

Description of Waste	Definition – (for info only)	Waste Codes	Type of Business
Wood Waste	Untreated wood or wood cuttings (unsuitable for reuse)	20. 01. 38	Research & Development
Wooden Packaging	(unsuitable for reuse) Containers - wooden, crates - wooden, empty used containers. Packaging -wooden, broken pallets, timber – untreated. Wood, wooden containers – contaminated.	15. 01. 03	Research & Development
Mixed Domestic Waste	General admin, commercial, industrial office waste. (non recyclable)	20. 03. 01	Research & Development
Mixed Metals	Ferrous & non ferrous mixed scrap (preferably segregated)	20. 01. 40	Research & Development
Construction & Demolition Waste	Bricks, building rubble, aggregates, ceramics, gravel, hardcore, road metal, rubble	17. 01 07	Research & Development

Section 2 – Description of Container

Fill in the details of the weight and type of container of each consignment of waste. The details describing the waste on the WTN should match those completed on the BOL. The '*Date of collection*' section is to be completed by FI Logistics Coordinator once collection from the ship has been arranged.

Section 3 – Transferee

To be completed by Interserve in the FI's.

Section 4 - Transferor

To be signed by the Base Commander or a delegated person. The SIC code for BAS is 72.19 (Research & Development). It is the responsibility of the BC to ensure that the WTN is correctly prepared and sent to both the FI Logistic Coordinator and the Ship's Chief Officer prior to the consignment being loaded onto the ship.

On arrival in the FI's the consignment of waste will be collected by Interserve directly (if offloaded at Mare Harbour) or by a third party (if offloaded at FIPASS). The WTN must include an accurate description of waste, which should be identical to the description provided on the BOL. Both the WTN and the BOL must accompany the waste until Interserve confirm receipt of the consignment by signing the bottom of the form. The fully completed WTN should be kept on file by the FI Logistics Coordinator.

An example of a WTN is included on the following page.

4.4.2 Example Waste Transfer Note

EXAMPLE WTN

Interserve Defence

No:

ENVIRONMENTAL PROTECTION ACT 1990 Section 34 Duty of Care
WASTE TRANSFER NOTE AND SERVICE AGREEMENT

COLLECTOR OF THE WASTE - Site Details:	REGISTERED WASTE CARRIER:
	INTERSERVE
GEMMAS GULCH LANDFILL SITE	
INTERSERVE DEFENCE	Reg No:
MOUNT PLEASANT COMPLEX	Issued By: INTERSERVE DEFENCE LIMITED
FALKLAND ISLANDS	Telephone: **6437**

1. WASTE DETAILS (Provide a detailed decription of the waste with reference to List of Wastes Regulations 2005. Incorrect or poorly described descriptions may result in the form being rejected)

Description of waste **Mixed General Waste (no metal, woods)**

Waste Codes **20 03 01**

Type of Business ..... **Research & Development**

2. DESCRIPTION OF CONTAINER/EQUIPMENT AND SERVICE

Container Sizes & weight (Litres)	**2 x FIBC**
	85 x 85 x 110 cm 150kg each

Skips	**None**

Vehicle (Name of Ship): **RRS James Clark Ross**

Date of collection: **(to be completed by FI Logistic co-ordinator when collection arranged)**

3. TRANSFEREE (BLOCK CAPITALS)	**4. TRANSFEROR (Producer)** (BLOCK CAPITALS)
Full Name	Full Name **Clare Fothergill**
Signed	Signed .....
Date & Time.....	Date & Time: **29.10.2013 - 2pm**
Section: **INTERSERVE DEFENCE, MPC**	Base : **Rothera**
Location of Transfer.....	SIC Code: **72.19 (Research and Development)**

By signing Section 4 I confirm that the information regarding the nature of the waste & containers is both accurate and correct and that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Opening hours are restricted with access closed outwith these times

Monday through Saturdays	**0730 - 1200**	**1300 - 1730**
Sunday	Closed	

Any persons found to be dumping in any other areas except the designated tip will be subject to disciplinary action.

SKIP NET SUPPLIED	Signed ..... Full Name .....
SKIP NET RETURNED	Signed ..... Full Name .....

ANY SKIP NET NOT RETURNED WILL BE CHARGED TO THE SKIP USER

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Section 5

PROHIBITED PRODUCTS

5 PROHIBITED PRODUCTS

5.1 Prohibited products

Annex III of the Environmental Protocol prohibits the introduction of the following products to Antarctica:

- polychlorinated biphenyls (PCBs),
- non-sterile soil,
- polystyrene beads, chips or similar forms of man-made packaging (not including vermiculite); and
- pesticides

None of these items are to be sent to the Antarctic by post, person or in cargo.

BAS also discourages the use of any poly-vinyl chloride (PVC) products and elemental mercury.

5.2 Non-native Species

The introduction of non-native organisms onto land or ice shelves in Antarctica is prohibited, except in accordance with a permit.

This includes;

- all non-native animals (e.g. dogs),
- plants or seeds (e.g. pot plants); and
- micro-organisms (e.g. viruses, bacteria and yeasts).

The BAS Biosecurity Handbook (available on the BAS intranet) has been produced to provide practical measures for BAS personnel working and travelling to the Antarctic. These guidelines conform to current best practice regarding non-native species management produced by the Antarctic Treaty Consultative Meeting (ATCM) Committee for Environmental Protection (CEP), the Council of Managers of National Antarctic Programs (COMNAP) and the Scientific Committee on Antarctic Research (SCAR).

5.3 Items requiring a Permit

BAS staff who propose to import non-native species into Antarctica for scientific purposes must apply for a permit from the Foreign and Commonwealth Office. These can be issued via delegated authority by the BAS Environment Office. Staff requiring a permit should contact the Environmental Manager at BAS Cambridge for advice.

Section 6

NON-HAZARDOUS WASTE

6 NON-HAZARDOUS WASTE

Non-hazardous waste produced by BAS activities in the Antarctic are returned to the UK or FI for recycling or safe disposal. Disposal practices are listed below in alphabetical order.

6.1 Aluminium Cans & Foil

Aluminium and steel cans can be collected and transported in open topped drums (painted green) or green FIBCs. **Food cans must be thoroughly rinsed out** and either crushed or shredded. Clean aluminium foil can also be included. Drinks cans should be compacted using a can crusher.

On all drums or FIBCs mark a recycling triangle and clearly mark the top and sides with the words "ALUMINIUM AND STEEL CANS". Consign to the Environmental Manager and returned to the UK for recycling.

6.2 Biological Waste

Used/unwanted local biological material, which has been contaminated by chemicals (e.g. preservatives) or radio-isotopes, is to be treated as hazardous waste and returned to UK.

Waste biological material that has been moved from one location in Antarctica to another (e.g. Signy to Rothera) is generally to be autoclaved or incinerated. Contact the Environmental Manager for advice.

Non-native species imported to Antarctica must be disposed of following the requirements laid out in the permit which authorised their import into Antarctica (see Section 5.3). Please see the BAS Biosecurity Handbook for further advice on non native species.

Small quantities of used/unwanted **local uncontaminated** biological material (e.g. moss, lichen, seaweed, fish) should be disposed of by throwing into the sea.

6.2.1 Micro-organism Cultures

i) Stations

Laboratory cultures of micro-organisms and plant pathogens are to be autoclaved where possible. Remains are to be treated as general landfill waste.

ii) Ships

Before carrying out any culture work, personnel should have completed a Preliminary Environmental Assessment and an appropriate method of disposal agreed. Please contact the Environmental Manager for advice if this has not been completed.

6.3 Building & Demolition materials

Building materials which are surplus to requirement (in particular after a building project is completed) should in the first instance be used on station. Consult the BC and Facilities Technician as appropriate. Materials should not be left on station however, if they are not scheduled for use.

If materials are no longer required in the Antarctic and have a value, they may be sent as general cargo for resale in FI. Consult the FI Logistics Co-ordinator prior to consigning the items (see Section 3.1.2). Mark with case number and "SURPLUS BUILDING MATERIALS FOR RESALE".

If materials are not saleable, see relevant section (metals, wood, plastics etc.). If in doubt, contact the Environmental Manager.

6.4 Cardboard

Cardboard no longer required for packaging should be broken down, baled and sealed inside a green FIBC, or banded onto a pallet for recycling in UK. Remove or flatten large staples where practicable as these may puncture the bale bags. Other staples and tape need not be removed. Mark bales with green paint and stencil a recycling triangle.
Sections of cardboard can also be used for making up the top and bottom of compactor bales.

On BAS ships, the recycling of cardboard is not currently considered practical due to the lack of space. It is incinerated or disposed of at port reception facilities.

In the UK, the cardboard is either pulped and recycled into cardboard boxes, or shredded and composted.

6.5 Chemicals (non-hazardous)

Non-hazardous chemicals should be packaged carefully, reusing their original packaging. The top and sides of the container should be painted yellow and labelled with a case number and "WASTE CHEMICALS, NON-HAZARDOUS, NON-REGULATED". Non-hazardous chemicals are returned to the UK for safe disposal and should be consigned to the Environmental Manager.

6.6 Clothing, Fabric & Rags

6.6.1 Good quality clothing

Good quality second hand clothing can be sent to the Seaman's Mission in the FI's. Please ensure that the clothing is of a good quality can actually be worn again. Mark as 'SECOND HAND CLOTHING FOR REUSE' and consign to the FI Logistics Coordinator.

6.6.2 Waste clothing & fabrics

Waste clothing and fabrics generated on station can either be used as rags in the workshops or separated and returned to UK in green FIBC or cardboard carton. Mark as "WASTE TEXTILES FOR RECYCLING" and consign to the Environmental Manager.

On board ships clean clothing, fabrics or rags can be burnt in the incinerator or returned for disposal at port reception facilities.

6.7 Electrical and Electronic Equipment

All waste electrical and electronic equipment (WEEE) should be returned to the UK for recycling or disposal. Many WEEE items contain components which are considered to be hazardous and therefore must be transported as hazardous waste. See Section 7.20 for further details.

Non-hazardous WEEE consignments should be packed in sturdy containers, painted green with a recycling triangle stencilled on the side. Label with the case number and consign to the Environmental Manager in the UK.

If electrical equipment is still in good working order, then it should be sent to FI for resale. See Section 3.1.2.

For disposal of BAS IT equipment, computers, laptops, printers etc see Section 6.14.

6.8 Flares

Used flares (i.e. flares which have been fired), can be transported in a cardboard box labelled "FLARES NON HAZARDOUS". These should be consigned to the Environment Manager and sent to the UK. For unused flares see Section 7.10 Explosives.

6.9 Food, Contaminated packaging

Plastics and packaging contaminated with food should be incinerated at Halley and Rothera.

For BI, KEP and Signy plastics and packaging contaminated with food must be stored in griff bins or 205l plastic drums with lids and consigned back to the Environment Manager in the UK for incineration. Due to recent changes in legislation this type of waste cannot be sent to landfill in the FI.

6.10 Food, Dry

- Stations
  Surplus, or out of date unopened tinned or dried food should be consigned to the Environmental Manager in the UK. (This type of waste can no longer be sent to landfill in the FIs).
  Transport in good quality wooden crates or cartons with top and sides painted yellow. Stencil the top and sides "UEs" (Unconsumed Edibles).

- Ships
  On board ships, old or surplus unopened food is to be stored on board and disposed of at port reception facilities.

6.11 Food, Wet

Wet food waste including scraps, peelings, tea bags etc is dealt with differently at each station. See section 6.10.1 for specific advice regarding waste poultry products.

Food scraps should not be fed to birds under ANY circumstances.

- Bird Island
  Uncooked food waste should be pressure cooked before being discharged into the sea with other wet domestic waste. Bones, fats and other food waste that decompose slowly (e.g. orange peels, tea bags and onion skins) can be frozen and stored in griff bins before being incinerated onboard ship. Please liaise with the Chief Officer on board the ship prior to consigning any waste food.

- King Edward Point
  Wet domestic waste should be macerated and discharged directly to the sea, except at Larsen House where it is collected in a septic tank. Onion skins, rice and other food that does not break down easily are collected separately and dumped at sea.

- Signy

  Wet domestic waste should be discharged into the sea after passing through the waste disposal unit. Alternatively it can be thrown into the sea at Gash cove from the shore or inflatable boat.

- Rothera

  All food waste generated at Rothera and from field parties returning to Rothera should be incinerated. Incinerator ashes should be consigned to the Environmental Manager and sent to the UK for disposal as non hazardous waste.

- Halley VI

  All food waste generated at Halley VI should be stored in griff bins and then incinerated during the summer season. During the winter when the incinerator is not in use the griff bins should be stockpiled until the first burn of the summer season. Incinerator ashes should be consigned to the Environmental Manager and sent to the UK for disposal as non hazardous waste.

- Ships

  It is prohibited to discharge food waste that is not comminuted or ground, within the Antarctic Treaty Area (i.e. south of 60 degrees).

  Food waste should be passed through the ship's waste disposal unit, comminuted to less than 25mm and discharged at a distance not less than 12 nautical miles from the shore. When operating within the 12-mile limit, food waste is dealt with as follows:

  RRS Ernest Shackleton
  On the Ernest Shackleton, bones and other foods which are difficult to commute should be bagged and taken directly to the incinerator.

  RRS James Clark Ross
  When not permitted to discharge food waste the incinerator can be used. However food waste may need to be stored prior to the incinerator being in operation. The following locations can be used for storage:

  - The Sewage Retention Tank can be used for limited periods for wet food waste generated in the galley from the waste disposal unit, sinks, and scuppers.
  - The chest freezer in the incinerator room lobby can be used for limited quantities of food waste that cannot be put in the retention tank.
  - For large quantities of waste the cargo freezer can be used. There are a total of four freezer rooms on board and if necessary (although not ideal), provisions can be moved to make space in the cargo freezer for waste food.

6.11.1 Poultry

Special care should be taken with waste poultry products (including eggs and egg shells) as they can carry avian viruses which may be a danger to Antarctic birds. To reduce this risk, only boneless poultry is sent to BAS stations. No poultry products other than egg powder should be supplied for field camps.

At Rothera and Halley, poultry waste is incinerated along with other food waste.

At all other stations, waste poultry products should be boiled for ten minutes to sterilize viruses and disposed of with other food waste. Egg shells should be stored in griff bins along with other food outlined in section 6.11 before being sent for incineration onboard ship

On board ships waste poultry products should be incinerated.

6.11.2 Meat on the bone

Meat on the bone should not be sent to any of the stations. If however this occurs by accident, then the bones should be kept frozen until they can be incinerated on site on or the ships.

6.12 Grey Water

- Bird Island

  Grey water should be discharged into the sea via the waste pipe from the station or via the stream that runs past the station.

- King Edward Point

  Grey water should be discharged directly to the sea, except at Larsen House where it is collected in a septic tank.

- Signy

  Grey water should be discharged to the beach beside the station jetty

- Rothera

  All grey water is processed by the sewage treatment plant.

- Halley

  Grey waster is discharged into a common drainage system, which is fed directly into the sewage treatment plant (STP). The STP processes everything together, and clean outfall goes into the snow pit. Grey water from the Drewry is untreated and goes directly to a snow pit.

6.13 Glass

- Stations

At all stations (apart from KEP) mixed glass should be rinsed out and collected in open topped drums. It should not be crushed or broken when stored. Waste glass does not need to be segregated prior to disposal.

Paint the drums green, clearly marking the top and sides with the case number, a stencilled recycling triangle and the words “WASTE GLASS”. Consign to the Environmental Manager and send to the UK. Mixed glass is reused in the UK as a building/road surface aggregate.

At **KEP** all clean waste glass should be passed through the glass imploder before it is transported. Crushed glass from KEP should be collected in FIBCs (with orange FI lettering) and consigned to the Public Works Department (PWD) in the FI where it will be reused as aggregate.

- Ships

On board the ships, glass and small amounts of metal waste should be pulverised in the shredder and stored on board for disposal at port reception facilities.

6.14 Incinerator Ash

Incinerator ash produced by the incinerators at Rothera and Halley should be placed in a drum, marked non hazardous and consigned to the Environmental Manager in the UK.

6.15 I.T. /Computers/ Printers

Old BAS computers, printers, laptops etc should be returned to Roy Dodson in the IT Dept at BAS Cambridge, for security clearance prior to final disposal. Do not consign these items as waste. **For all other waste electronic items see Section 6.7.**

6.16 Light bulbs

Standard tungsten light bulbs (the old type) are sent to landfill. These should be packaged in a cardboard box painted orange, consigned to Interserve and sent to the FI for disposal. Energy efficient bulbs and strip lights are hazardous WEEE waste. See section 7.11 for details.

6.17 Metal, scrap

A WTN must be completed with consignments of metal. See Section 4.4.

6.17.1 General scrap

Before sending out surplus equipment which is in good working order, check whether items can be used by other stations or ships or send to the FI for resale. See Section 3.1.2 for further details.

Segregate different types of metal into ferrous (e.g. steel/iron) and non-ferrous (e.g. copper) where possible.

The current preference is that scrap metal should be banded to wooden pallets wherever possible. It can also be transported in 45 gallon drums if they are appropriately packed. Make sure the drums are clean, not corroded in anyway and where possible bind them to a wooden pallet. Make sure that the drums are not overloaded. (Drums with banded tops cannot be lifted with vertical drum lifters and therefore have to handled manually if they are not bound to a pallet.) Larger, bulky items can be sent out. Smaller waste metal items can be placed in crates or skips marked "WASTE SCRAP METAL".

Consignments of scrap metal should be marked with orange paint and marked "SCRAP METAL". They should be sent to Interserve in the FI where the waste will be resold to scrap metal dealers, or sent back to the UK for recycling.

6.17.2 Skips

Old skips which are no longer suitable for use (e.g. rusty, cracked or damage) should be returned to the Falkland Islands for disposal. Inform the FI Logistics co-ordinator and the Chief Officer of the ship to ensure that retired skips are properly disposed of and do not get put back into rotation. Skips for the bases should be ordered through the FI Logistics Co-ordinator by August each year.

6.18 Oil, cooking

For waste oil and other lubricants see Section 7.12.

- Stations

Waste cooking oil generated on station (e.g. vegetable oil) is not to be disposed of with food waste, and must be sent to the FI for disposal. Do not mix waste cooking oil with waste lubricants.

Store the oil in the original packaging or good quality 25 litre drums. Paint sides and top orange, and mark "WASTE COOKING OIL". The drums do not require hazard labels. Consign to Stanley Services, in the FI.

- Ships

On RRS Ernest Shackleton, waste cooking oil can be incinerated. On RRS James Clark Ross, waste cooking oil is collected and then discharged to port reception facilities along with the other waste oil.

6.19 Oil Filters

At all stations, waste oil filters should be fully decanted, collected in open topped drums painted green with a recycling stencil and labelled “oil filters”. Consign to the Environmental Manager, and return to the UK for recycling.

6.20 Paper

- Stations

Paper should be reused for packaging where possible. Paper, newspaper and magazines can all be recycled and should be stored and transported in FIBCs marked with a green recycling triangle, the case number and the word “PAPER written on the side. Waste paper should be consigned to the Environmental Manager and sent to the UK.Waste paper is sent to paper mills where it is shredded, pulped and cleaned. It is generally reused for newspapers.

- Ships

  Due to storage constraints paper and cardboard (including milk cartons) are burnt in the ship’s incinerator. Plastic wrapping should be removed and compacted. Incinerator ash is collected and disposed of at port reception facilities.

6.21 Plastics

- Stations

Clean domestic plastics including all bottles, containers, wrapping, packaging and any single polymer bags should be collected in the bins provided, compacted and returned to UK for recycling**. Any plastics contaminated with food must be incinerated if they cannot be cleaned**. Clean containers will be accepted provided that there is no residue remaining.

Pack in FIBCs marked with a recycling triangle, mark the side of the bag with the case number and the word “PLASTICS”. Consign to the Environmental Manager and send to the UK.

25 litre lube containers contaminated with oily residue should be packaged separately in bulk bags (with the lids kept on), painted green and labelled as ‘OILY PLASTICS FOR RECYCLING’. Consign to the Environmental Manager (Clean plastics should kept segregated and packaged as described above).

The following plastics can also be recycled if separated from other plastics:

- CDs and DVDs
- Polystyrene and polythene foam.

Clean non-recyclable plastics should be compacted and baled with general landfill wastes. Seal in orange FIBC and send to FI for disposal. Consign to Interserve MPA. Glass-Reinforced-Plastic (GRP) is also sent for landfill.

Food-contaminated wet plastics should be incinerated either on base (Halley & Rothera) or consigned to the Environment Manager in the UK for incineration. This type of waste can no longer be sent to landfill in the FI.

- Ships

Waste plastics are compacted and disposed of at port reception facilities.

6.22 Rope

Large quantities of waste rope should be packaged in FIBC bags whilst small quantities can be packaged in cardboard boxes. All packages should be marked up 'ROPE FOR RECYCLING' and be consigned to the Environmental Manager. Disposal options for rope vary and final disposal will be dependent on current contractual arrangements in the UK.

6.23 Solar Panels

Photovoltaic (PV) panels are not currently considered as WEEE under UK legislation. (Although this situation may change in the near future.)

Panels for disposal should therefore be packaged separately from other WEEE waste with suitable packaging to ensure they will not be damaged in transit. Mark the consignments as 'WASTE PV PANELS' and a recycling triangle. Consign to the Environmental Manager in the UK.

6.24 Tetrapak

Clean tetrapak and all waxed cartons (i.e. juice cartons) should be collected at stations for recycling. Waxed cartons (with or without internal foil lining) should be washed out before being flattened and packed separately from other materials, into a green FIBC. Mark "TETRAPAK" and consign to the Environmental Manager in the UK.

6.25 Toners and Inkjet Cartridges

Wherever possible, waste toner and inkjet cartridges should be placed in the original packaging that they arrived in. They should then be placed in a plastic-lined box or crate surrounded by vermiculite. Paint green, stencil a recycling triangle and mark with the case number and "WASTE TONER CARTRIDGES". Consign to the Environmental Manager for recycling in the UK.

6.26 Vermiculite

Vermiculite consists of flakes of silica. Clean vermiculite should be reused where possible for the repacking of liquids, hazardous chemicals or other hazardous waste for return to UK.

Surplus clean vermiculite should be returned to the UK for reuse. Vermiculite MUST be kept dry if it is to be reused. Seal in polythene bags prior to sealing in cartons. Surplus clean vermiculite should be consigned to BAS Purchasing and Shipping Section in Cambridge. Please provide details on the BOLS with regard to the weight of your consignment as accurately as possible.

Only package contaminated vermiculite which cannot be reused in FIBC bags. Contaminated vermiculite should be treated as waste (possibly hazardous depending on what it has been contaminated with) and consigned to the Environmental Manager in the UK.

6.27 Wood, including packing cases

- Stations

Where practicable, waste wood should be separated into two grades: unusable scrap and reusable timber.

Reusable timber should be recycled for buildings or other construction projects. Crates, cases and pallets should be repaired if necessary and reused. (Reserve the small UN approved Nefab boxes for waste batteries.) Wood should be made safe by removing or turning over nails and screws.

If timber cannot be reused on station and is of good quality, it should be sent to the FI for resale. Label crates with case number and "WASTE WOOD FOR RESALE or REUSE". Do not paint crates.

Break up poor condition cases and pack into wooden crates with off-cuts and other pieces of wood. Paint the upper part of the sides and top of the crate orange and mark "WASTE WOOD". Consign to Interserve in the FI**. A WTN must be completed. See Section 4.4.** Some of this wood may be reused in FI, where practicable.

At Rothera and Halley, some waste timber is burnt to increase the calorific value of loads for incineration. Plywood should not be burnt unless absolutely necessary.

Blue pallets are treated with chemical preservatives. Waste blue pallets should be returned to UK for safe disposal, and not offloaded in FI. Consign to the Environmental Manager. Surplus collapsible Nefab boxes should be returned to Cambridge for reuse.

- Ships

Damaged dunnage or waste wood is kept on board for disposal at port reception facilities.

For any further information on the disposal of non-hazardous wastes please contact the BAS Environmental Manager.

Section 7

HAZARDOUS WASTES

7 HAZARDOUS WASTES

All hazardous waste produced by BAS activities in the Antarctic, except for waste fuels and oils, are returned to UK for safe disposal or recycling. Waste fuels and oils are disposed of in FI. Disposal practices are listed below in alphabetical order. See Appendix 3 for a list of hazardous waste information required on BOLs.

7.1 Aerosols

Surplus full, part used, empty or damaged aerosols are to be returned to the UK for disposal. Seal tops of aerosols with packing tape and place in a plastic lined UN approved case filled with vermiculite.

Paint the sides and top of the case yellow and cover all previous markings. Mark case number and "WASTE AEROSOLS" on the top and sides. Label the case as Class 2.1 (flammable gas), Class 2.2 (compressed gas) or Class 2.3 (toxic gas), depending on the contents. Read the manufacturer's labelling to determine the class. Affix appropriate hazard labels and label the case UN no. 1950. If a case contains a mixture of aerosols with different hazard classes, then label with all relevant hazard classes. Consign to the Environmental Manager in the UK.

7.2 Antifreeze

Waste antifreeze is returned to UK for safe disposal. It is shipped in good quality decanted 205 litre avtur drums. Do not overfill.

Antifreeze used by BAS in the Antarctic is generally mono ethylene glycol (MEG) or mono propylene glycol (MPG). These chemicals can be mixed in waste drums. They do not require hazard labels under the IMDG code for shipping. Paint upper band and top of drum yellow and write the case number and stencil "WASTE ANTIFREEZE" on top and sides. Consign to the Environmental Manager. Contact the Environmental Manager for advice on the disposal of antifreeze which is not MEG or MPG.

7.3 Asbestos

It is dangerous to handle or inhale loose, soft fibrous or sprayed asbestos which may produce dust or fibres.
ONLY TRAINED PERSONNEL SHOULD HANDLE ASBESTOS
Contact the Health and Safety Manager for further advice.

All work involving asbestos is covered by *the Control of Asbestos at Work Regulations* 1987, as amended in 1992. This sets out requirements for protective equipment and safe working limits for working with asbestos.

- Handle asbestos waste with great care.
- Prevent the generation of asbestos dust (e.g. spray with water)
- Do not break up boards or sheeting.
- Wear appropriate PPE.

Contact the Health and Safety Manager for further advice on the handling, transportation and disposal of asbestos. Only trained personnel should handle asbestos.

7.4 Batteries

All types of waste batteries are returned to UK for recycling. Batteries must be separated into two main categories, wet and dry cell. Dry cell batteries need further segregation as explained below.

7.4.1 Wet Cell, Lead-acid

Wet lead acid batteries do not need to be decanted but the battery lids should be taped to avoid spillage. The terminals should also be taped up to prevent short circuiting. Pack in a polythene lined UN approved Nefab crate filled with vermiculite. Paint yellow and stencil with a green recycling triangle. Label as "BATTERIES, WET, FILLED WITH ACID", UN Number 2794, and affix Hazard class 8 label.

Sealed lead-acid or 'gel' batteries should also be packed as above. Mark "BATTERIES, WET, NON SPILLABLE, FOR RECYCLING" and mark UN no. 2800. Label hazard class 8 and affix corrosive labels.

Consign both types of lead acid batteries to the Environmental Manager and send to the UK.

7.4.2 Dry Cell, Lithium

Lithium is an alkali metal that reacts violently with water; in batteries it is used with non-water based electrolytes. Misuse or damage of lithium batteries can result in fire, explosion and venting of hazardous substances.

Lithium batteries must be kept dry when stored and transported to avoid fire or explosion!

There are two types of lithium battery, lithium metal and lithium ion batteries. Both are high energy power sources and are potentially hazardous. They should be packaged separately.

It is essential that lithium batteries are handled, packed and labelled correctly to avoid incident**. Do not pack with any other battery types.**

To ensure batteries remain dry and undamaged in transport, securely tape the terminals of each battery, bubble wrap or otherwise protect against damage and seal in a plastic bag. This must be done in dry conditions.

Pack the sealed batteries in vermiculite in polythene-lined UN approved boxes to prevent ingress of water. During storage and handling ensure that they are not exposed to high temperatures including direct sunlight.

(i) Lithium Metal Batteries

These are non rechargeable batteries which contain metallic lithium. They are generally used in cameras, calculators and watches. Pack lithium metal batteries as above separate from other types of battery. Mark the case as hazard class 9, UN no. 3090 and affix hazard labels.

Waste Electrical and Electronic Equipment (WEEE) known to contain lithium metal batteries which cannot be removed should be consigned as lithium batteries rather than WEEE. Mark the case hazard class 9, UN no. 3091.

(ii) Lithium Ion Batteries

These are rechargeable batteries used in mobile phones and laptops. Pack lithium ion batteries as above separate from other types of battery. Mark the case as hazard class 9, UN no. 3480 and affix hazard labels. Equipment known to contain lithium ion batteries which cannot be removed should be consigned as lithium batteries marked as hazard class 9, UN no. 3481.

For both types of lithium batteries paint the case yellow, stencil with a green recycling triangle, mark the top and sides with the case number and “WASTE ION/METAL LITHIUM BATTERIES” and affix hazardous labels. Consign to the Environmental Manager in the UK.

7.4.3 Dry cell, Nickel Metal Hydride

Dry cell nickel metal hydride (NiMH) batteries which include many rechargeable AA or AAA batteries should be packaged separately from other batteries. Tape terminals and pack in a plastic lined UN approved box, with vermiculite. Paint the case yellow, stencil with a green recycling triangle, mark the top and sides with the case number and “WASTE NICKEL METAL HYDRIDE BATTERIES” mark with hazardous class 9, UN no. 3496 and affix hazardous labels. Consign to the Environmental Manager in the UK.

7.4.4 Dry cell, Other

This category includes:

- zinc carbon;
- zinc chloride;
- nickel cadmium (NiCd);
- alkaline manganese;
- mercuric oxide;
- zinc air; and
- silver oxide.

Each battery must have its terminals taped up. Batteries should be separated into the different types where practicable, bagged and labelled accordingly. Pack these bags into separate sections of a plastic-lined Nefab box filled with vermiculite.

Paint the case yellow, stencil with green recycling triangle and mark the top and sides with the case number and "ASSORTED WASTE BATTERIES, NON REGULATED". They do not require hazard labels under the IMDG code for shipping. Consign to the Environmental Manager in the UK.

7.5 Chemicals

7.5.1 Individual Chemicals

All waste chemicals should be returned to the UK for safe disposal. See Section

No hazardous chemicals are to be disposed of down sinks.

Liquid waste chemicals are to be transported in 25 litre UN approved drums. Chemicals from different hazard classes must not be mixed together and should be disposed of into separate drums.

Accurate records of the chemicals being used must be maintained by personnel undertaking the experiments. The records can then be used to document the type and concentration of the chemicals in each waste drum.

In general, unused chemicals are returned in their original containers (e.g. glass or plastic bottles). Tops must be securely fastened and sealed using plastic packing tape. When handling containers make sure that appropriate gloves, protective clothing and goggles are worn. Each taped container must then be sealed in a plastic bag and packed carefully into a wooden case or UN approved box with vermiculite.

All cases containing chemicals for disposal must be painted yellow. If a case is being reused then ensure that all previous identification, except for the case dimensions and marking indicating UN approved container, are painted over.

7.5.2 Mixed Chemicals

NEVER mix substances with different UN hazard classes. This is highly dangerous.

Special attention must be given to ensure that oxidising agents (hazard class 5.10 are kept separate from other chemicals.

Acids and Alkalis (hazard class 8) are not to be packed in the same outer packaging or stowed in the same container. They must be clearly labelled in separate containers.

For mixed chemicals, the name and the UN number of all the constituent chemicals must be listed. In addition it must be made clear which the primary hazardous chemical is using the information provided in Appendix 3. Label cases or drums with the following information:

- case number;
- name of all the constituent chemicals and identify the primary hazardous chemical;
- hazard class of all constituent chemicals and identify primary hazardous chemical;
- UN no. of all constituent chemicals and identify primary hazardous chemical; and
- Flashpoint of all constituent chemicals and identify the substance with the lowest flashpoint. (*For example*, if a container contained methylated spirit (FP +18°C) and white spirit (FP +38°C), the flashpoint of the drum would be +18°C.)

If there is insufficient space to label the drum or case affix a copy of the BOL in a sealed clear plastic bag to the top of the case or drum. A second copy of the BOL sealed in a plastic cover should be included inside the box before it is sealed.

The word “WASTE” should be added in front of the name of the chemical. E.g. “WASTE HYDROCHLORIC ACID”. For wastes which are solutions or mixtures, the word “SOLUTION” or “MIXTURE” should be added. E.g. “WASTE ACETONE SOLUTION”

Fix the appropriate primary hazard class sticker to the case or drum with subsidiary hazard class stickers as necessary. If in doubt about the primary hazard contained in a case or drum of mixed chemicals, contact the Environmental Manager.

Osmium tetroxide, perchloric acid, hydrogen peroxide, and glacial acetic acid all require special handling.
Contact the Health and Safety Adviser at BAS, Cambridge.

7.6 Clinical waste

For sanitary waste and condoms see Section 7.18.

- Stations

The station Doctor or BC is responsible for the safe disposal of clinical wastes.

General clinical waste (e.g. used dressings, tongue depressors and swabs) should be incinerated at Rothera and Halley. At all other stations general clinical waste should be sent to the ships for incineration. Yellow plastic bio-bags labelled "MEDICAL AND SANITARY WASTE" are provided to contain these wastes. The bags should be sealed in the yellow Griff-bins provided. The Griff-bins should be labelled "CLINICAL WASTE, UNSPECIFIED, N.O.S", hazard class 6.2, UN 3291.

'Sharps' (e.g. syringe needles, blades, scalpels, and empty syringes) are collected in the yellow 'sharps' disposal boxes provided. They are to be returned to UK for safe disposal. Mark top and sides with case number and "CLINICAL WASTE, UNSPECIFIED, N.O.S, (SHARPS)", hazard class 6.2, UN 3291 and consign to the Environmental Manager.

The disposal of surplus controlled drugs from the stations is coordinated by the BAS Medical Unit via the medical staff on the stations.

- Ships

The ship's Doctor should liaise with the Chief Officer, who is responsible for the disposal of clinical waste. Such waste is to be sealed in the yellow plastic bio-bags provided. The Chief Officer arranges incineration of clinical waste when necessary. 'Sharps' are put into the yellow disposal boxes provided and returned to the UK for safe disposal (see above). Refer to MSI/Gen/27 for the disposal of surplus controlled drugs.

7.7 Compressed gas cylinders

In most circumstances gas cylinders are returned to the UK as cargo not waste. They should therefore have cargo numbers and not waste numbers. Please contact Mick Cliff for further details mpc@bas.ac.uk.

All scientific gas cylinders incur a standing rental charge. It is the owner's responsibility to arrange return of cylinders to the supplier as soon as possible on return to Cambridge.

The calibration gases used by some scientific instruments can be very expensive. Before venting, check with the Environmental Manager.

All cylinders even those which have been vented should be marked as hazardous, in case any residue remains or if they have not been vented properly.

Observe the following instructions when preparing waste cylinders for shipment:

Table 6. Pre-transportation Instructions for gas cylinders

Gas	Instructions
Acetylene	Vent completely. Label ACETYLENE, DISSOLVED hazard class 2.1, UN no. 1001.
Calibration Gases	May have to be returned to the UK part full. Contact BAS, Cambridge for further instructions.
Carbon dioxide	Vent completely. Label CARBON DIOXIDE, Haz Class 2.2, UN no. 1013
Entonox	Vent completely. Label COMPRESSED GAS, OXIDIZING, N.O.S., (Nitrous Oxide, Oxygen), hazard class 2.2 & 5.1, UN no. 3156, subsidiary risk: Marine pollutant.
Helium	Vent completely. Label HELIUM, COMPRESSED Haz Class 2.2, UN no. 1046
Hydrogen	Vent leaving a pressure of 100 psi. Label HYDROGEN, COMPRESSED, hazard class 2.1, UN no. 1049.
Nitrogen	Vent leaving a positive pressure of at least 10 psi. Label NITROGEN, COMPRESSED, hazard class 2.2, UN no. 1066.
Oxygen	Vent completely. Label OXYGEN, COMPRESSED, Haz Class 2.2 & 5.1, UN no. 1072
Propane	Vent completely. Label PROPANE, hazard class 2.1, UN no. 1978.
Refrigerants R12, R502	Do not vent. Return to UK for recovery. Label hazard class 2.2, UN no. 1028 (R12). & UN no. 1973 (R502)

All cylinders which are to be emptied or part emptied must be vented well clear of any station buildings, vehicles and storage dumps. Vented cylinders must be clearly marked as empty. All cylinders being shipped out must have their screw-on caps securely fastened.

Oil or grease must not be allowed to contaminate the threads of regulators used on any compressed gas cylinder. Take particular care with oxygen bottles. A mixture of any oils or grease with oxygen forms a self igniting explosive concoction.

Acetylene, propane and hydrogen cylinders contain a residue of the original gas, even when vented, and therefore retain their original hazard classification. Affix appropriate hazard labels.

Cylinders containing obsolete or surplus refrigerant gases must be returned unvented for recycling. Consign to the Environmental Manager. Contact the Environmental Manager for disposal instructions for cylinders that appear to be in bad condition or cannot be vented.

7.7.1 Fire extinguishers

Fire extinguishers are routinely serviced and reconditioned at Rothera, Halley and King Edward Point. Only the Facilities Engineers should service or dispose of fire extinguishers. Refer to the Fire Extinguisher Maintenance Manual (2008).

7.8 Detergents & Disinfectants

BAS generally uses non-hazardous, environmentally friendly detergents and disinfectants (e.g. Citra-clean) at its stations where practicable. Use up any surplus stocks of detergents and disinfectants on site. If detergents and disinfectants cannot be used then they must be returned to UK for safe disposal.

Hazardous detergents and disinfectants are best left in their original bottles. Caps must be sealed with packing tape. Each bottle must then be sealed in a plastic bag. Sealed bottles must be packed into UN approved cases filled with vermiculite.

The top and sides of full cases must be painted yellow. Label the top and sides with the case number and "WASTE DETERGENTS AND DISINFECTANTS". If flammable, label the container with the name of the substance which has the lowest flashpoint and the hazard class, and UN number. Check Appendix 3 for the correct shipping name, volume, hazard class, and UN number and flashpoint. Affix appropriate hazard labels on cases. Consign to the Environmental Manager.

Empty, completely drained detergent or disinfectant bottles can be included with recyclable plastics.

7.9 Drums

7.9.1 AVTUR, MGO Drums

- **Stations**

The dregs from empty fuel drums should be fully decanted and, where practical, used in station boilers or heaters. Make use of absorbent mats provided in case of spillage.

Good condition drums are used for the collection of glass and tins and cans. The drums are deheaded using a special purpose tool, drained and steam cleaned or mopped with absorbents to ensure no liquid or vapour remains. The drums are then sealed with circular lids and a ring with clamp or nut and bolt fastening.

Surplus good condition empty drums should be consigned to Stanley Services for reuse in the FI. These must be supplied with drum caps.

Poor condition drums may be re-used as route markers at Halley, or sent to the FI to be reclaimed as scrap metal. See Section 6.15.

- **Ships**

Some drums are retained for reuse such as storing waste oil; others are discharged to an approved waste contractor.

7.9.2 Petrol Drums

Empty petrol drums are potentially dangerous as explosive vapour can build up inside them. **They should never be crushed** and can only be reused for storing waste petrol. Empty petrol drums should be fully decanted and vented. Retain original hazard markings (hazard class 3, UN no. 1203). Paint upper ring and top of drums orange and label "WASTE PETROL DRUM". Waste petrol drums should be consigned to Stanley Services for reuse and transported on the ship's deck to the FI.

7.10 Explosives

- **Stations**

Under international shipping regulations BAS is unable to return unwanted explosives from the Antarctic to the UK for disposal. Surplus emergency flares are to be fired off on base following the manufacturer's instructions, by trained personnel only.

For the disposal of surplus seismic explosives, detonators and explosives packaging, contact the Explosives Officer, at BAS Cambridge. See also Explosives Code of Practice, section 9, for detailed disposal instructions (available on BAS intranet).
http://basweb/information/manuals/explosives/index.html
Packaging which has contained explosives is best disposed of by burning.

No person other than qualified shot-firers acting on the authority of the BAS Director shall be allowed to fire explosive charges.

- **Ships**

Surplus flares carried on board are to be returned to the UK for proper disposal by the Coast Guard, Police or the manufacturer.

7.11 Fluorescent Tubes & Lamps

7.11.1 Intact Bulbs

Fluorescent tubes and lamps and energy saving bulbs contain a small amount of mercury and are therefore considered to be hazardous waste. All waste fluorescent tubes and lamps are to be returned to the UK for recycling. 99% of the tube is recycled. Metal halide light bulbs (used in floodlights) also contain some mercury and should be segregated from other types of bulbs. Pack as described below.

Standard light bulbs (old style incandescent bulbs) are not recyclable and should be disposed of with general waste. See Section 6.14 for packing requirements.

Fluorescent and energy saving bulbs should not be deliberately broken as they may release mercury-contaminated powders. Many tubes or lamps are filled to pressures above or below atmospheric pressure and if smashed may explode or implode. Unbroken waste fluorescent tubes or lamps should be tapped lightly at the ends to break the vacuum and render them less fragile.

Pack in the original cardboard boxes if possible, then into a heavy duty polythene-lined wooden box (or plastic tube with end caps) filled with vermiculite. Packing should be carried out in a well-ventilated area.

Paint the upper sides and top of the case yellow, stencil green recycling triangle and label with the case number and "WASTE / BROKEN FLUORESCENT TUBES /LAMPS/ ENERGY SAVING BULBS" on the top and sides. They do not require hazard labels under the IMDG code for shipping**.** Tubes or lamps must be consigned to the Environmental Manager in the UK.

7.11.2 Broken Bulbs

PPE including goggles, a mask and gloves should be worn when handling broken fluorescent or energy saving bulbs.

If fluorescent strip lighting or an energy saving bulb is broken there is a very small risk associated with mercury dust escaping from the unit. No adverse affects are expected from occasional exposure to broken lamps, but as a matter of good practice, prolonged or frequent exposure should be avoided through the use of adequate ventilation during disposal. Staff should follow these guidelines to minimise the risk of inhaling the dust or coming into contact with the dust.

Handling guidelines:

- Ventilate the room, by opening the windows. Leave them open for at least 15 minutes.
- Go out of the room while it's being ventilated.
- Wear rubber or plastic gloves, mask (ideally FFP2) and eye goggles while you're cleaning up the mercury and broken glass.
- Pick up the pieces of glass carefully and put them in a plastic bag or container. Use strips of duct tape for small pieces.
- Wipe the area with a damp cloth. Put the cloth in the same bag and seal it.
- If a broken fluorescent tube is thrown into a skip then the whole skip is considered to be hazardous waste. So please ensure that fluorescent tubes are packaged separately.
- Don't touch the mercury with your bare hands.
- Do not handle if you have an open undressed wound.
- Don't use a vacuum cleaner.
- Try not to create dust, but if there is any dust, avoid breathing it in.
- Don't put the mercury down the sink or the drain.
- Don't sweep the mercury up with a brush.
- Don't wash clothes with mercury on them in a washing machine – dispose of them in a sealed bag.

Package the broken tubes and bulbs in the same way as intact bulbs. See Section 7.11.1.

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7.12 Fuels and Oils

Waste fuels and oils are to be re-used on site to the maximum extent possible. Otherwise, consign to Stanley Services and send to the FI for safe disposal or reuse.

Different waste fuels are not to be mixed. **Oily rags should not be mixed with waste fuels.**

7.12.1 Diesel

- **Stations**

Transfer waste diesel (e.g. MGO) into good quality 205 litre Avtur drums. Do not overfill. Paint the top ring of the drum and the top orange. Label the top and sides with the case number and "WASTE DIESEL OIL". Label as UN No 1202, flashpoint +37.7°C to +55°C, hazard class 3. Attach flammable liquid stickers on the top and sides. Consign to Stanley Services in the FI.

- **Ships**

Marine diesel oil, or any other oily mixture, is prohibited from being discharged into the sea. All waste oil or oily mixtures must be retained on board and discharged at port reception facilities in the FI, South America or UK, or as otherwise permitted under Annex I of MARPOL 73/78.

7.12.2 Paraffin and avtur

AVTUR (aviation turbine fuel) is essentially paraffin with extra additives which make the fuel more suitable for use in aircraft engines. Waste paraffin and AVTUR can therefore be mixed together and sent to the FI for safe disposal. Send out in good quality 205 litre avtur drums. Do not overfill. Paint the upper ring of the drum and the top orange. Label the top and sides with the case number and "WASTE FUEL, AVIATION TURBINE FUEL". Label as hazard class 3, UN no. 1863 and flashpoint +40°C. Also attach flammable stickers on top and sides. Consign to Stanley Services in the FI.

7.12.3 Petrol

- **Stations**

Waste petrol must be decanted into good quality petrol drums. Petrol is extremely dangerous and must not be mixed with any other fuel. However, small amounts of methylated spirits contaminated with petrol may be added to waste petrol drums. Do not overfill petrol drums.

Under no circumstances is waste petrol to be incinerated at Rothera or Halley.

Waste petrol is sent to the FI for safe disposal. Paint top ring of the drum and the top orange. Label the top and sides with the case number and "WASTE PETROL". Label the drums hazard class 3, UN no. 1203 and flashpoint -40°C. Stick flammable liquid stickers on the top and side. Consign to Stanley Services, FI.

- **Ships**

Petrol is used on the ships for outboard engines and jiffy ice drills. Any fuel not used at the end of the season is returned to Stanley Services for safe disposal.

7.12.4 Lubricants & waste engine oil

- **Stations**

Lubricants and waste engine oils are sent to FI for safe disposal. Do not mix lube oil with other fuels or with cooking oil. Store in good quality 25 litre drums. Each drum must have its sides and top painted orange. Label the top and sides with the case number and "WASTE LUBRICANT". They do not require

hazard classes under the IMDG code for shipping. Consign to Stanley Services, FI.

- **Ships**

Waste lubricants are prohibited from being discharged into the sea. Retain waste lubricants on board in the ship's dirty lube oil tank, bilge retention tank or in good quality drums, for later disposal at port reception facilities. Contact the Environmental Manager if you are intending to offload in the UK.

7.12.5 Fuel/oil soaked rags and absorbents

At Rothera and Halley and on the ships, oily rags can be incinerated. At all other stations seal waste fuel (diesel/AVUTR etc but not Petrol) soaked/ oily rags or absorbents in a 45 gallon drum. Paint upper ring and top of the drum yellow. Label 'WASTE OILY RAGS' or 'WASTE ABSORBENTS', and allocate hazard class 4.2. Consign to the Environmental Manager in the UK.

Waste absorbents generated at Sky Blu, Fossil Bluff or in the field can be flown back to Rothera in UN approved containers (UN1H2) with the screw top lids secured , and marked as 'WASTE ABSORBENTS' (these are the red lidded bins used as poo bins). Once returned to Rothera the instructions above should be followed.

If there are large quantities of absorbents to be disposed of as a result of a significant spill these can be returned to the UK, following the procedure described above.

Rags that have been soaked with linseed oil should be incinerated immediately.

7.12.6 Fuel/oil soaked clothing

PPE and other clothing which has been contaminated during an oil spill or clean up should be placed in 45 gallon drums. Paint upper ring and top of the drum yellow. Label 'WASTE OILY CLOTHING/PPE' and allocate hazard class 4.2. Consign to the Environmental Manager in the UK.

7.13 Glue

Dispose of glue following the procedure outlined in Section 7.8 for waste detergents and disinfectants. Cases being sent out containing glue must be painted yellow and have "WASTE ADHESIVE" and the case number marked on the top and sides. If flammable, label the case with the name of the substance and its hazard class, UN number and flashpoint. The BOL must list for each case the volume of each type of glue, its proper shipping name, hazard

class, UN no. and flashpoint (See Appendix 3). Affix appropriate hazard labels on cases. Consign to Environmental Manager in the UK.

7.14 Lighters

Used lighters should be packed in cardboard boxes pained yellow with UN number 1057, under hazardous classification 2.1 (flammable gas). They should be sent back to the UK consigned to the Environmental Manager.

7.15 Mercury

Mercury is highly toxic and must be handled with great care. BAS has phased out the use of all metallic/elemental mercury to reduce the risks to our operations, H&S and the environment. For further advice please contact the Environment Office.

All waste mercury should be returned to the UK for recycling.

Mercury is most commonly found in thermometers. Thermometers should be sealed in a plastic bag. If a thermometer is broken then the mercury and any contaminated glass should be placed inside a heavy duty polythene bottle. Handle using rubber gloves, protective clothing and eye goggles. The cap of the bottle should be sealed with packing tape. Seal the bottle in a plastic bag.

The sealed bag should be placed in a heavy duty polythene container. To absorb any spillage the container should be filled with vermiculite. Label the top and sides of the container "WASTE MERCURY CONTAINED IN MANUFACTURED ITEMS". Label the container hazard class 8, UN no. 2809. The top of the container must then be fastened with packing tape and the container itself sealed in a plastic bag.

For final packing, sealed containers should be put into UN approved boxes filled with vermiculite. The case must be painted yellow. Stencil with green recycling triangle and label with the case number and "WASTE MERCURY CONTAINED IN MANUFACTURED ITEMS", hazard class 8, UN no. 2809 on the top and sides. Affix corrosive hazard stickers. Consign to the Environmental Manager in the UK.

7.16 Paint, Thinners & Stripper

Paint thinners and stripper should be disposed of following the procedure outlined in Section 7.8 for waste detergents and disinfectants. 25 litre UN approved safety drums can also be used for small quantities of waste paint and for used thinners and stripper. Cases being sent out containing paint, thinners or strippers must be painted yellow and have case numbers and "WASTE PAINT" or "WASTE PAINT RELATED MATERIALS" marked on the top and sides. If

flammable, label the case with the name of the substance with the lowest flashpoint, as well as its hazard class, UN number and flashpoint.

All paints, unless they are water-based emulsions, are class 3 flammable liquids. The BOL must list for each case the volume of each paint, stripper or thinner, proper shipping names, hazard classes, UN nos. and flashpoints (Appendix 3). Affix appropriate hazard labels on cases. Consign to the Environmental Manager in the UK.

7.17 Photochemicals

All waste photochemicals, including waste produced during the developing of x-rays, are returned to UK for disposal. If the silver content is high enough, it will be recovered by specialist recycling contractors. Pour into 25 litre UN approved safety drums. Only the final wash water can go down the sink.

Do not overfill drums; allow for expansion during transit. Paint the upper ring and top yellow, stencil with green recycling triangle and label with the case number and "WASTE CORROSIVE LIQUID, N.O.S. (POTASSIUM HYDROXIDE 2-5%)" on the sides and top. Mark Hazard Class 8, UN Number 1760. Affix corrosive hazard stickers. Consign to the Environmental Manager in the UK.

7.18 Radioactive waste

If you have any questions about radioactive waste disposal please contact the Radiation Protection Supervisor or the Health and Safety Manager at BAS, Cambridge after reading the information below.

7.18.1 Scientific Radioactive Waste

BAS produces small quantities of low level radioactive waste from its scientific research in the Antarctic. The research is very carefully reviewed and controlled to ensure that there is no risk to human safety or to the environment. The BAS Radiation Protection Supervisor has produced local rules governing the use of ionizing radiation in the Antarctic, which can be found on the BAS intranet.
http://basweb.nerc-bas.ac.uk/health_and_safety/Work%20with%20Radiation/index.php

These must be read and complied with by anyone using radio-isotopes.

The disposal route of radioactive waste from BAS ships and Antarctica must be agreed with the BAS Radiation Protection Supervisor and the Environment Office **prior** to any work being carried out. Local Rules for Rothera and the JCR provide details of the local procedures that must be followed. The transport and disposal rules regulating radioactive waste are complex and specific to each isotope and activity level.

If BAS radioactive waste is carefully packaged, labelled and documented, it poses no risk to health or safety. All radioactive waste must be returned to the UK for safe disposal. Radioactive waste must never be mixed with other wastes, although radioactive waste may contain other hazards (e.g. scintillants).

The full cost to dispose of waste radioactive materials shall be paid for by the science project which produced it. No specific BAS budget exists for dealing with radioactive waste. For this reason, science projects (planning to use radioactive materials) will only be authorised when it has demonstrated it has the appropriate budgetary allowances allocated to the disposal of all expected radioactive waste.

Please also refer to the BAS Policy for Work with Ionising Radiation, Authorisation, Responsibilities and Arrangements found on the BAS intranet.
http://basweb.nerc-bas.ac.uk/health_and_safety/documents/procedures/BAS%20Radiation%20Policy%20HS%2013%20Jan%2011.pdf

Radioactive waste which is not packed, labelled or documented according to the instructions provided by the BAS Senior Radiation Supervisor will not be loaded by BAS ships.

Wherever practical, radioactive waste must be separated by isotope. Different isotopes should not be mixed in the same container.

A safe working system will be prepared by the Health and Safety Officer for the handling of radioactive waste in British Ports.

7.18.2 Ionisation Chamber Smoke Detectors

Ionisation chamber smoke detectors contain a very small, sealed, low-level radioactive source. They are to be carefully packaged in a wooden or cardboard box, painted yellow and consigned to the Environmental Manager in the UK. The boxes do not require hazard labels.

7.19 Sanitary Protection & Condoms

- **Stations**

Sanitary wastes (e.g. tampons, sanitary towels) should be collected in the appropriate bins in the female toilets.

Condoms are collected in bins in the male toilets.

Collection of these wastes is arranged by the BC at appropriate intervals. The waste should be stored in yellow plastic bags labelled "SANITARY WASTE" and incinerated at Rothera or Halley, or transferred to BAS ships for incineration at other bases.

- **Sky Blu & Fossil Bluff**

Sanitary wastes and condoms should be collected in UN approved containers (poo bins) along with solid human waste and returned to Rothera for incineration. See Section 7.19.

- **Ships**

On BAS ships, bags are provided in cabins to dispose of sanitary waste and condoms. Cabin occupants should place these bags in the main dry waste sacks for incineration.

7.20 Sewage & Urine

- **Bird Island**

Sewage & urine are macerated and discharged directly to the sea.

- **King Edward Point, South Georgia**

Sewage and urine are macerated and discharged directly to the sea, except at Larsen House where solids are collected in a septic tank.

- **Signy**

Sewage and urine are macerated and discharged to the beach beside the station jetty.

- **Rothera**

A sewage treatment plant treats sewage, urine, and grey water. Dried treated sludge is incinerated.

  - **Sky Blu**

Solid human waste should be collected and stored in UN approved containers (poo bins). These should be returned to the Rothera and the contents disposed of in the incinerator. Urine should be discharged into a snow pit.

- **Fossil Bluff**
  Solid waste should be collected and stored in UN approved containers (honey pots). These should be returned to the Rothera and the contents disposed of in the incinerator. Urine should be discharged directly onto the scree slope in the demarcated area to the south of Bluebell Cottage.

- **Halley VI**

A sewage treatment plant treats sewage and the dried treated sludge is incinerated.

- **Ships**

Sewage is passed through the ship's treatment plant before discharge. The treatment plants meet the standards required by MARPOL 73/78 Annex IV and tests laid down by the IMO. These systems are inspected regularly.

Sanitary waste or condoms should not be disposed of through sewage systems. See Section 7.18 for disposal guidelines.

7.21 Waste Electrical and Electronic Equipment (WEEE)

All waste electrical and electronic equipment (WEEE) should be returned to the UK for recycling or disposal.

If electrical equipment is still in good working order, then it should be sent to FI for resale. For further advice contact the Logistics Co-ordinator for the Falkland Islands.

Some WEEE is classified as hazardous waste. This includes WEEE that contains hazardous components or substances such as;

- polychlorinated biphenyls, e.g. in capacitors/condensers
- ozone-depleting substances, e.g. in fridges and freezers or air conditioning units (See Section 7.7)
- asbestos (See Section 7.1)
- fluorescent tubes (See Section 7.11)
- lead acid, lithium or dry cell batteries (See Section 7.4)
- cathode ray tubes, e.g. in some televisions and older computer monitors
- radioactive components (e.g. beryllium coated parts). (Section 7.17)

WEEE waste containing hazardous materials should be packed and consigned as per the guidance provided for that particular substance. (E.g. WEEE containing fluorescent tubes should be packaged as outlined in Section 5.12). Where no additional guidance has been provided WEEE containing hazardous substances should be packaged in containers painted yellow and consigned to the Environmental Manager in the UK.

Non-hazardous WEEE consignments should be painted green with a recycling triangle stencilled on the side. Label with the case number and consign to the Environmental Manager.

Electrical cable currently has a high value in the recycling market and should be returned to the UK with WEEE.

Section 8

FIELD WASTE

8 FIELD WASTE

All waste with the exception of grey water should be removed from the field.

8.1 Food waste

On snow and ice, food waste should be collected in a UN approved container provided by the Field Operations Manager and returned to the ship or station for disposal. At the coast, food waste can be discharged to the sea or seashore below the high water mark.

At Sky Blu and Fossil Bluff food waste and food scraps strained from grey water should be collected and flown back to Rothera for incineration. For more advice, refer to the Sky Blu and Fossil Bluff operating manuals.

8.2 Grey Water

On snow and ice, grey water should be discharged to a snow pit. At the coast, grey water can be discharged to the sea or seashore.

At Sky Blu strained grey water is discharged to a snow pit. At Fossil Bluff strained grey water is discharged onto the scree slope outside Bluebell Cottage.

8.3 Sewage

All solid human waste generated in the deep field (apart from field trips departing from Halley) should be collected and stored in UN approved containers provided by the Field Operations Manager. These should be returned to Rothera and the contents disposed of in the incinerator.

Sewage generated by field parties departing from Halley can be discharged untreated to a snow pit.

Human waste should not be discharged into vegetated areas, freshwater lakes or streams under ANY circumstance.

8.4 Solid waste

All general waste should be returned to the station or ship in the bags provided in the field boxes. Waste should be segregated as shown in the table below.

Table 7. Field Waste Segregation

Type of waste	Bag colour	Bag label
Glass, cans and metal	Red	WASTE METAL AND GLASS
Paper, card, plastics	Blue	WASTE PAPER, CARD AND PLASTIC
Sanitary, medical, condoms	Yellow	MEDICAL AND SANITARY WASTE
Hazardous waste (e.g. batteries)	White	HAZARDOUS WASTE

Yellow and white bags must also be sealed in appropriately marked and labelled UN approved packages if they are to be flown out of the field in BAS aircraft.

In some circumstances, waste can be segregated on return to BAS stations for recycling if previously agreed with the Base GA's.

Empty fuel drums can be loaded onto Nansen sledges. If removing large quantities of drums by aircraft, drums can have their tops cut off and be flattened to reduce volume.

Removal of waste is not required if removal by any practical option is likely to risk human life or cause a greater adverse impact than leaving in situ.

Certain items may be required for future depots. For example, surplus unopened food boxes, waste wood and fuels, antifreeze or lubricants. Always check with the FOM/BC before removal.

8.5 The Sledge Code of Practice for Field Waste

- Minimise your waste - reduce output by completely using all consumables before consigning to waste.
- Reuse containers for everyday purposes (e.g. storage of used tea-bags, containers for jam/spreads etc.
- Reduce volume of waste - crush all cartons, cans, tins, boxes; fold paper and card flat if possible.
- Separate your waste into the allocated waste bags supplied (see table above).
- When full, compress tightly, pack securely and store safely around camp.
- Record the number and types of bags produced.

- When travelling, ensure bags are not damaged or ripped.

- Waste should never be left in the field. (If there are exceptional circumstances where waste cannot be removed from the field this **must be** discussed with the Field Operations Manager or the Base Commander **prior** to the waste being depoted.)

- A used fuel drum CAN be carried on a Nansen - take enough rope!

- Before you leave the crag, worksite or camp, look around for any loose rubbish and pick it up!

- Remember, the major factor governing the removal of your waste is YOU! There is little reason not to remove all your rubbish back to the station or ship.

Appendix 1: Annex III to the Protocol on Environmental Protection

Waste Disposal & Waste Management

ANNEX III TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY: WASTE DISPOSAL AND WASTE MANAGEMENT

Article 1 *General Obligations*

1. This Annex shall apply to activities undertaken in the Antarctic Treaty area pursuant to scientific research programs, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.
2. The amount of wastes produced or disposed of in the Antarctic Treaty area shall be reduced as far as practicable so as to minimise impact on the Antarctic environment and to minimise interference with the natural values of Antarctica, with scientific research and with other uses of Antarctica which are consistent with the Antarctic Treaty.
3. Waste storage, disposal and removal from the Antarctic Treaty area, as well as recycling and source reduction, shall be essential considerations in the planning and conduct of activities in the Antarctic Treaty area.
4. Wastes removed from the Antarctic Treaty area shall, to the maximum extent practicable, be returned to the country from which the activities generating the waste were organised or to any other country in which arrangements have been made for the disposal of such wastes in accordance with relevant international agreements.
5. Past and present waste disposal sites on land and abandoned work sites of Antarctic activities shall be cleaned up by the generator of such wastes and the user of such sites. This obligation shall not be interpreted as requiring:
   a) the removal of any structure designated as a historic site or monument; or
   b) the removal of any structure or waste material in circumstances where the removal by any practical option would result in greater adverse environmental impact than leaving the structure or waste material in its existing location.

Article 2 *Waste Disposal by Removal from the Antarctic Treaty Area*

1. The following wastes, if generated after entry into force of this Annex, shall be removed from the Antarctic Treaty area by the generator of such wastes:
   (a) radio-active materials;
   (b) electrical batteries;
   (c) fuel, both liquid and solid;
   (d) wastes containing harmful levels of heavy metals or acutely toxic or harmful persistent compounds;
   (e) poly-vinyl chloride (PVC), polyurethane foam, polystyrene foam, rubber and lubricating oils, treated timbers and other products which contain additives that could produce harmful emissions if incinerated;
   (f) all other plastic wastes, except low density polyethylene containers (such as bags for storing wastes), provided that such containers shall be incinerated in accordance with Article 3 (1);
   (g) fuel drums; and
   (h) other solid, non-combustible wastes;

   provided that the obligation to remove drums and solid non-combustible wastes contained in subparagraphs (g) and (h) above shall not apply in circumstances where the removal of such wastes by any practical option would result in greater adverse environmental impact than leaving them in their existing locations.

2. Liquid wastes which are not covered by paragraph 1 above and sewage and domestic liquid wastes, shall, to the maximum extent practicable, be removed from the Antarctic Treaty area by the generator of such wastes.

3. The following wastes shall be removed from the Antarctic Treaty area by the generator of such wastes, unless incinerated, autoclaved or otherwise treated to be made sterile:
   (a) residues of carcasses of imported animals;
   (b) laboratory culture of micro-organisms and plant pathogens; and
   (c) introduced avian products.

Article 3 *Waste Disposal by Incineration*

Subject to paragraph 2 below, combustible wastes, other than those referred to in Article 2 (1), which are not removed from the Antarctic Treaty area shall be burnt in incinerators which to the maximum extent practicable reduce harmful emissions. Any emission standards and equipment guidelines which may be recommended by, *inter alia* , the Committee and the Scientific Committee on Antarctic Research shall be taken into account. The solid residue of such incineration shall be removed from the Antarctic Treaty area.

1. All open burning of wastes shall be phased out as soon as practicable, but no later than the end of the 1998/1999 season. Pending the completion of such phase-out, when it is necessary to dispose of wastes by open burning, allowance shall be made for the wind direction and speed and the type of wastes to be burnt to limit particulate deposition and to avoid such deposition over areas of special biological, scientific, historic, aesthetic or wilderness significance including, in particular, areas accorded protection under the Antarctic Treaty.

Article 4 *Other Waste Disposal on Land*

1. Wastes not removed or disposed of in accordance with Articles 2 and 3 shall not be disposed of onto ice-free areas or into fresh water systems.

2. Sewage, domestic liquid wastes and other liquid wastes not removed from the Antarctic Treaty area in accordance with Article 2, shall, to the maximum extent practicable, not be disposed of onto sea ice, ice shelves or the grounded ice-sheet, provided that such wastes which are generated by stations located inland on ice shelves or on the grounded ice-sheet may be disposed of in deep ice pits where such disposal is the only practicable option. Such pits shall not be located on known ice-flow lines which terminate at ice-free areas or in areas of high ablation.

3. Wastes generated at field camps shall, to the maximum extent practicable, be removed by the generator of such wastes to supporting stations or ships for disposal in accordance with this Annex.

Article 5 *Disposal of Waste in the Sea*

1. Sewage and domestic liquid wastes may be discharged directly into the sea, taking into account the assimilative capacity of the receiving marine environment and provided that:
    (a) such discharge is located, wherever practicable, where conditions exist for initial dilution and rapid dispersal; and
    (b) large quantities of such wastes (generated in a station where the average weekly occupancy over the austral summer is approximately 30 individuals or more) shall be treated at least by maceration.

2. The by-product of sewage treatment by the Rotary Biological Contacter process or similar processes may be disposed of into the sea provided that such disposal does not adversely affect the local environment, and provided also that any such disposal at sea shall be in accordance with Annex IV to the Protocol.

Article 6 *Storage of Waste*

All wastes to be removed from the Antarctic Treaty area, or otherwise disposed of, shall be stored in such a way as to prevent their dispersal into the environment.

Article 7 *Prohibited Products*

No polychlorinated biphenyls (PCBs), non-sterile soil, polystyrene beads, chips or similar forms of packaging, or pesticides (other than those required for scientific, medical or hygiene purposes) shall be introduced onto land or ice shelves or into water in the Antarctic Treaty area.

Article 8 *Waste Management Planning*

1. Each Party which itself conducts activities in the Antarctic Treaty area shall, in respect of those activities, establish a waste disposal classification system as a basis for recording wastes and to facilitate studies aimed at evaluating the environmental impacts of scientific activity and associated logistic support. To that end, wastes produced shall be classified as:
    (a) sewage and domestic liquid wastes (Group 1);

(b) other liquid wastes and chemicals, including fuels and lubricants (Group 2);
(c) solids to be combusted (Group 3);
(d) other solid wastes (Group 4); and
(e) radioactive material (Group 5).

2. In order to reduce further the impact of waste on the Antarctic environment, each such Party shall prepare and annually review and update its waste management plans (including waste reduction, storage and disposal), specifying for each fixed site, for field camps generally, and for each ship (other than small boats that are part of the operations of fixed sites or of ships and taking into account existing management plans for ships):
(a) programs for cleaning up existing waste disposal sites and abandoned work sites;
(b) current and planned waste management arrangements, including final disposal;
(c) current and planned arrangements for analysing the environmental effects of waste and waste management; and
(d) other efforts to minimise any environmental effects of wastes and waste management.

3. Each such Party shall, as far as is practicable, also prepare an inventory of locations of past activities (such as traverses, field depots, field bases, crashed aircraft) before the information is lost, so that such locations can be taken into account in planning future scientific programs (such as snow chemistry, pollutants in lichens or ice core drilling).

Article 9 *Circulation and Review of Waste Management Plans*

1. The waste management plans prepared in accordance with Article 8, reports on their implementation, and the inventories referred to in Article 8 (3), shall be included in the annual exchanges of information in accordance with Articles III and VII of the Antarctic Treaty and related Recommendations under Article IX of the Antarctic Treaty.

2. Each Party shall send copies of its waste management plans, and reports on their implementation and review, to the Committee.

3. The Committee may review waste management plans and reports thereon and may offer comments, including suggestions for minimising impacts and modifications and improvement to the plans, for the consideration of the Parties.

4. The Parties may exchange information and provide advice on, *inter alia* , available low waste technologies, reconversion of existing installations, special requirements for effluents, and appropriate disposal and discharge methods.

Article 10 *Management Plans*

Each Party shall:

(a) designate a waste management official to develop and monitor waste management plans; in the field, this responsibility shall be delegated to an appropriate person at each site;

(b) ensure that members of its expeditions receive training designed to limit the impact of its operations on the Antarctic environment and to inform them of requirements of this Annex; and

(c) discourage the use of poly-vinyl chloride (PVC) products and ensure that its expeditions to the Antarctic Treaty are advised of any PVC products they may introduce into that area in order that these products may be removed subsequently in accordance with this Annex.

Article 11 *Review*

This Annex shall be subject to regular review in order to ensure that it is updated to reflect improvement in waste disposal technology and procedures and to ensure thereby maximum protection of the Antarctic environment.

Article 12 *Cases of Emergency*

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or equipment and facilities of high value or the protection of the environment.

2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

Article 13 *Amendment or Modification*

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the amendment.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

Appendix 2: Annex IV to the Protocol on Environmental Protection

Prevention of marine pollution

ANNEX IV TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY PREVENTION OF MARINE POLLUTION

Article 1 *Definitions*

For the purpose of this Annex:

(a) "discharge" means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying;

(b) "garbage" means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship, except those substances which are covered by Articles 3 and 4;

(c) "MARPOL 72/78 means the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 relating thereto and by any other amendment in force thereafter;

(d) "noxious liquid substance" means any noxious liquid substance as defined in Annex II of MARPOL 73/78;

(e) "oil" means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined oil products (other than petrochemicals which are subject to the provisions of Article 4);

(f) "oily mixture" means a mixture with any oil content; and

(g) ship" means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms.

Article 2 *Application*

This Annex applies, with respect to each Party, to ships entitled to fly its flag and to any other ship engaged in or supporting its Antarctic operations, while operating in the Antarctic Treaty area.

Article 3 *Discharge of Oil*

1. Any discharge into the sea of oil or oily mixture shall be prohibited, except in cases permitted under Annex I of MARPOL 73/78. While operating in the Antarctic Treaty area, ships shall retain on board all sludge, dirty ballast, tank washing waters and other oily residues and mixtures which may not be discharged into the sea. Ships shall discharge these residues only outside the Antarctic Treaty area, at reception facilities or as otherwise permitted under Annex I of MARPOL 73/78.

2. This Article shall not apply to:
   (a) the discharge into the sea of oil or oily mixture resulting from damage to a ship or its equipment:
      (i) provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimising the discharge; and
      (ii) except if the owner or the Master acted either with intent to cause damage, or recklessly and with the knowledge that damage would probably result; or

   (b) the discharge into the sea of substances containing oil which are being used for the purpose of combating specific pollution incidents in order to minimise the damage from pollution.

Article 4 *Discharge of Noxious Liquid Substances*

The discharge into the sea of any noxious liquid substance, and any other chemical or other substances, in quantities or concentrations that are harmful to the marine environment, shall be prohibited.

Article 5 *Disposal of Garbage*

1. The disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, and plastic garbage bags, shall be prohibited.

2. The disposal into the sea of all other garbage, including paper products, rags, glass, metal, bottles, crockery, incineration ash, dunnage, lining and packing materials, shall be prohibited.

3. The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder, provided that such disposal shall, except in cases permitted under Annex V of MARPOL 73/78, be made as far as practicable from land and ice shelves but in any case not less than 12

nautical miles from the nearest land or ice shelf. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 millimetres.

4. When a substance or material covered by this article is mixed with other such substance or material for discharge or disposal, having different disposal or discharge requirements, the most stringent disposal or discharge requirements shall apply.

5. The provisions of paragraphs 1 and 2 above shall not apply to:
   (a) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken, before and after the occurrence of the damage, for the purpose of preventing or minimising the escape; or
   (b) the accidental loss of synthetic fishing nets, provided all reasonable precautions have been taken to prevent such loss.

6. The Parties shall, where appropriate, require the use of garbage record books.

Article 6 *Discharge of Sewage*

1. Except where it would unduly impair Antarctic operations:
   (a) each Party shall eliminate all discharge into the sea of untreated sewage ("sewage" being defined in Annex IV of MARPOL 73/78) within 12 nautical miles of land or ice shelves;
   (b) beyond such distance, sewage stored in a holding tank shall not be discharged instantaneously but at a moderate rate and, where practicable, while the ship is en route at a speed of no less than 4 knots.

   This paragraph does not apply to ships certified to carry not more than 10 persons.

2. The Parties shall, where appropriate, require the use of sewage record books.

Article 7 *Cases of Emergency*

1. Articles 3, 4, 5 and 6 of this Annex shall not apply in cases of emergency relating to the safety of a ship and those on board or saving life at sea.
2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

Article 8 *Effect on Dependent and Associated Ecosystems*

In implementing the provisions of this Annex, due consideration shall be given to the need to avoid detrimental effects on dependent and associated ecosystems, outside the Antarctic Treaty area.

Article 9 *Ship Retention Capacity and Reception Facilities*

1. Each Party shall undertake to ensure that all ships entitled to fly its flag and any other ship engaged in or supporting its Antarctic operations, before entering the Antarctic Treaty area, are fitted with a tank or tanks of sufficient capacity on board for the retention of all sludge, dirty ballast, tank washing water and other oil residues and mixtures, and have sufficient capacity on board for the retention of garbage, while operating in the Antarctic Treaty area and have concluded arrangements to discharge such oily residues and garbage at a reception facility after leaving that area. Ships shall also have sufficient capacity on board for the retention of noxious liquid substances.

2. Each Party at whose ports ships depart en route to or arrive from the Antarctic Treaty area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all sludge, dirty ballast, tank washing water, other oily residues and mixtures, and garbage from ships, without causing undue delay, and according to the needs of the ships using them.

3. Parties operating ships which depart to or arrive from the Antarctic Treaty area at ports of other Parties shall consult with those Parties with a view to ensuring that the establishment of port reception facilities does not place an inequitable burden on Parties adjacent to the Antarctic Treaty area.

Article 10 *Design, Construction, Manning and Equipment of Ships*

In the design, construction, manning and equipment of ships engaged in or supporting Antarctic operations, each Party shall take into account the objectives of this Annex.

Article 11 *Sovereign Immunity*

1. This Annex shall not apply to any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with this Annex.

2. In applying paragraph 1 above, each Party shall take into account the importance of protecting the Antarctic environment.

3. Each Party shall inform the other Parties of how it implements this provision.

4. The dispute settlement procedure set out in Articles 18 to 20 of the Protocol shall not apply to this Article.

Article 12 *Preventive Measures and Emergency Preparedness and Response*

In order to respond more effectively to marine pollution emergencies or the threat thereof in the Antarctic Treaty area, the Parties, in accordance with Article 15 of the Protocol, shall develop contingency plans for marine pollution response in the Antarctic Treaty area, including contingency plans for ships (other than small boats that are part of the operations of fixed sites or of ships) operating in the Antarctic Treaty area, particularly ships carrying oil as cargo, and for oil spills, originating from coastal installations, which enter into the marine environment. To this end they shall:
(a) co-operate in the formulation and implementation of such plans; and
(b) draw on the advice of the Committee, the International Maritime Organisation and other international organisations.

The Parties shall also establish procedures for cooperative response to pollution emergencies and shall take appropriate response actions in accordance with such procedures.

Article 13 *Review*

The Parties shall keep under continuous review the provisions of this Annex and other measures to prevent, reduce and respond to pollution of the Antarctic marine environment, including any amendments and new regulations adopted under MARPOL 73/78, with a view to achieving the objectives of this Annex.

Article 14 *Relationship with MARPOL 73/78*

With respect to those Parties which are also Parties to MARPOL 73/78, nothing in this Annex shall derogate from the specific rights and obligations thereunder.

Article 15 *Amendment or Modification*

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the measure.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

Appendix 3: Hazardous Substances Classification

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 1 - EXPLOSIVES					
AMMOSPEX	0082	1.1D		EXPLOSIVE,BLASTING, TYPE B	
CASE BOOSTERS	0042	1.1D		BOOSTERS	
CUTTERS, CABLE, EXPLOSIVE	70	1.4S		CUTTERS, CABLE, EXPLOSIVE	
DAY/NIGHT DISTRESS	0191	1.4G		SIGNAL DEVICES, HAND	
DETONATORS	0456	1.4S		DETONATORS,ELECTRIC	
GAMMA CORD	0065	1.1D		CORD,DETONATING	
GEOFLEX 200-CORD	0065	1.1D		CORD,DETONATING	
GEOSPIKE-CHARGES	0081	1.1D		EXPLOSIVE,BLASTING TYPE A	
HANDSMOKE MK2	0432	1.4S		ARTICLES, PYROTECHNIC	
INSHORE PACK	0191	1.4G		SIGNAL DEVICES, HAND	
LIFESMOKE MK3	0197	1.4G		SIGNALS, SMOKE	
MAGNADET DETONATORS	0030	1.1B		DETONATORS, ELECTRIC	
MAROON MK3	0195	1.3G		SIGNALS, DISTRESS	
MAROON ROCKET	0431	1.4G		ARTICLES, PYROTECHNIC	
MINIFLARE 3	0312	1.4G		CARTRIDGES, SIGNAL	
MINIFLARES	0054	1.3G		CARTRIDGES, SIGNAL	
MINI MAGNADET 0.05 M LEAD	0255	1.4B		DETONATORS ELECTRIC	
OFFSHORE PACK	0191	1.4G		SIGNAL DEVICES, HAND	
PARA RED MK 111	0429	1.2G		ARTICLES, PYROTECHNIC	
PENTAFLEX 100	0065	1.1D		CORD, DETONATING	
PENTAFLEX 40	0065	1.1D		CORD, DETONATING	
PINPOINT RED MK6	0191	1..4G		SIGNAL DEVICES, HAND	
SEISMEX HE	0082	1.1D		EXPLOSIVE, BLASTING, TYPE B	
SEIMEX PRIMER	0084	1.1D		EXPLOSIVE, BLASTING, TYPE D	
SUPER PRIME BOOSTERS	0042	1.1D		BOOSTERS	
THUNDERFLASH	0355	1.2L		ARTICLES, EXPLOSIVE, N.O.S. (THUNDERFLASH)	
TROJAN 6L PENOLITE PRIMERS	0042	1.1D		BOOSTERS	

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 2.1 - FLAMMABLE GAS					
ACETYLENE	1001	2.1		ACETYLENE, DISSOLVED	
AEROSOL ADHESIVE	1950	2.1		AEROSOLS	
AEROSOL PAINT: FAST DRY	1950	2.1		AEROSOLS	
AEROSOL PAINT: HAMMER AND BLACK	1950	2.1		AEROSOLS	
ARDROX	1950	2.1		AEROSOLS	
BUTANE	1011	2.1		BUTANE	
BUTANE REFILL	1950	2.1		AEROSOLS	
CALOR GAS	1978	2.1		PROPANE	
CAMPING GAS CYLINDERS		SEE BUTANE			
COLMAN SUPER-GAS	2037	2.1		RECEPTACLES, SMALL, CONTAINING GAS	
COMPUTER CLEANERS	1950	2.1		AEROSOLS	
EASYLINE ULTIMATE	1950	2.1		AEROSOLS	
ETHANE	1035	2.1		ETHANE	
EXPANDING FOAM	1950	2.1		AEROSOLS	
FAST DRY ENAMEL MATT	1950	2.1		AEROSOLS	
GLOSS/FLUORESCENT/TOUCH UP PAINT	1950	2.1		AEROSOLS	
HYDROGEN	1049	2.1		HYDROGEN, COMPRESSED	
HYDROGEN (REFRIGERATED)	1966	2.1		HYDROGEN, REFRIGERATED LIQUID	
ISOPROPYL ALCOHOL AEROSOL	1950	2.1		AEROSOLS	
OPEN GEAR SPRAY	1950	2.1		AEROSOLS	
LIGHTERS	1057	2.1		LIGHTERS	
MAPP GAS	1077	2.1		PROPYLENE	
METHANE	1971	2.1		METHANE, COMPRESSED	
METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED	1060	2.1		METHYLACETYLENE AND PROPADIENE MIXTURE, STABILIZED	

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
METHYLCHLORIDE (REFRIGERANT GAS R 40)	1063	2.1		METHYL CHLORIDE (REFRIGERANT GAS R 40)	
MICROSPAY AUTOMATIC AIR FRESHENER	1950	2.1		AEROSOLS	
PROPANE	1978	2.1		PROPANE	
PROPYLENE	1077	2.1		PROPYLENE	
RESIN CLEANER (AEROSOL)	1950	2.1		AEROSOLS	
SHAVING FOAM	1950	2.1		AEROSOLS	
SOLVENT CLEANER AEROSOL	1950	2.1		AEROSOLS	
SPRAYMOUNT ADHESIVE	1950	2.1		AEROSOLS	
SUPASIL LUBRICANT	1950	2.1		AEROSOLS	
TRITEC	1950	2.1		AEROSOLS	
TT-P-1757-SPRAY	1950	2.1		AEROSOLS	
WD-40	1950	2.1		AEROSOLS	
WIRE ROPE SPRAY	1950	2.1		AEROSOLS	
** IMDG - For aerosols with a capacity of 1000cm cubed or less the mark "AEROSOLS" may be applied instead of a label					

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 2.2 - NON FLAMMABLE					
COMPRESSED GAS					
AIR BOTTLES	1002	2.2		AIR, COMPRESSED	
AIR DUSTER	1950	2.2		AEROSOLS	
AIR HORN	1950	2.2		AEROSOLS	
ANTI-STATIC FOAM CLEANER	1950	2.2		AEROSOLS	
ARGON	1006	2.2		ARGON, COMPRESSED	
ARGOSHIELD / WELDAP	1956	2.2		COMPRESSED GAS, N.O.S. (ARGON, CARBON DIOXIDE)	
ARGON (REFRIGERATED)	1951	2.2		ARGON, REFRIGERATED LIQUID	
CARBON DIOXIDE	1013	2.2		CARBON DIOXIDE	
CARBON DIOXIDE (REFRIGERATED)	2187	2.2		CARBON DIOXIDE, REFRIGERATED LIQUID	
CHAIN AND DRIVE SPRAY	1950	2.2		AEROSOLS	
COMPRESSED AIR	1002	2.2		AIR, COMPRESSED	
COOGAR	1956	2.2		COMPRESSED GAS, N.O.S. (COOGAR)	
ENTONOX	3156	2.2 & 5.1		COMPRESSED GAS, OXIDISING, N.O.S. (NITROUS OXIDE,	
FLRARM RE ARM PACK		See CARBON DIOXIDE			
FIRE EXTINGUISHERS	1044	2.2		FIRE EXTINGUISHERS	
HELIUM	1046	2.2		HELIUM, COMPRESSED	
HELIUM (REFRIGERATED)	1963	2.2		HELIUM, REFRIGERATED LIQUID	
LEAK DETECTION SPRAY	1950	2.2		AEROSOLS	
NITROGEN	1066	2.2		NITROGEN, COMPRESSED	
NITROGEN (REFRIGERATED)	1977	2.2		NITROGEN, REFRIGERATED LIQUID	
NITROUS OXIDE	1070	2.2 & 5.1		NITROUS OXIDE	
OXYGEN	1072	2.2 & 5.1		OXYGEN, COMPRESSED	
OXYGEN (REFRIGERATED)	1073	2.2 &5.1		OXYGEN, REFRIGERATED LIQUID	
OXYGEN IN NITROGEN	3156	2.2 & 5.1		COMPRESSED GAS, OXIDISING, N.O.S. (OXYGEN IN	Marine Pollutant
1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)	3159	2.2		1,1,1,2-TETRAFLUOROETHANE (REFRIGERANT GAS R 134a)	

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
REFRIGERANT GAS (R12)	1028	2.2		DICHLORODIFLUOROMETHANE	
REFRIGERANT GAS (R12)	1028	2.2		REFRIGERANT GAS R 12	
REFRIGERANT GAS (404A)	3337	2.2		REFRIGERANT GAS R 404A	Marine Pollutant
REFRIGERATING MACHINES	2857	2.2		REFRIGERATING MACHINES	
REFRIGERANT GAS (R502)	1973	2.2		CHLORODIFLUOROMETHANE AND	
REFRIGERANT GAS (R502)	1973	2.2		REFRIGERANT GAS R 502	
TEST GAS FOR SMOKE DETECTOR HEADS	1950	2.2		AEROSOLS	

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 3 - FLAMMABLE LIQUIDS					
ABS CLEANER	1193	3	-1	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
ABS GLUE	1133	3	18	ADHESIVES	I or II or III
ACETONE	1090	3	-18	ACETONE	II
ACETONITRILE FAR UV HIPERSOLV	1648	3	+ 2	ACETONITRILE	II
ANTIFREEZE SOLUTIONS	1993	3	23	FLAMMABLE LIQUIDS, N.O.S. (ANTIFREEZE)	I or II or III
AQUASURE GLUE	1133	3	18	ADHESIVES	I or II or III
ARALDITE RAPID	1133	3	18	ADHESIVES	I or II or III
ARMAFLEX ADHESIVE	1133	3	-1	ADHESIVES	I or II or III
ARMAFLEX CLEANER	1263	3	-18	PAINT RELATED MATERIAL	Marine Pollutant I or II or III
AVIATION KEROSENE (AVTUR)	1863	3	40	FUEL , AVIATION ,TURBINE ENGINE	III
BELTEX	1268	3	< 0	PETROLEUM DISTILLATES, N.O.S. (BELTEX)	Marine Pollutant I or II or III
BITUMASTIC SOLUTIONS	1263	3	32	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
BITUMEN PAINT	1999	3	40	TARS, LIQUID	II or III
BITUMEN PRIMER	1999	3	40	TARS, LIQUID	II or III
BLACKFRIAR METAL PRIMER	1263	3	32	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
BLACKFRIAR PATENT KNOTTING	1263	3	+ 12	PAINT	Marine Pollutant I or II or III
BOSTIK 2402	1133	3	18	ADHESIVES	I or II or III
BOSTIK 'C'	1133	3	18	ADHESIVES	I or II or III
BROLAC SOLVENT BASED TRIM PAINTS	1263	3	38	PAINT	Marine Pollutant I or II or III
BRUSH CLEANER, EVOSTIK	1263	3	18	PAINT RELATED MATERIAL	Marine Pollutant I or II or III
BRUSH CLEANER, GPR RESIN	1090	3	-18	ACETONE	II

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
BUTANEDIONE	1120	3	30	BUTANOLS	II or III
BUTANOL	1120	3	29	BUTANOLS	II or III
BUTANONE GPR	1193	3	-1	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
BUTYLADHESIVE	1133	3	4	ADHESIVES	I or II or III
CASCAMITE WOOD GLUE	1263	3	38	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
CELLULOSE THINNERS	1263	3	16	PAINT RELATED MATERIAL	Marine Pollutant I or II or III
COLEMANS FUEL	1203	3	-18	PETROL	Marine Pollutant II
COLRON WOOD DYE	1263	3	44	PAINT	Marine Pollutant I or II or III
CONCRETE FLOOR PAINT	1263	3	32	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
CONTACT ADHESIVE	1133	3	25	ADHESIVES	I or II or III
COVERCOAT FINISH	1263	3	53	PAINT	Marine Pollutant I or II or III
COW GUM	1133	3	18	ADHESIVES	I or II or III
CROWN PROTECTIVE COATINGS	1263	3	32	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
CROWN THINNER / CLEANER	1263	3	48	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
CRYSTIC GELCOAT	1866	3	32	RESIN SOLUTION	Marine Pollutant I or II or III
CRYSTIC SOLUTION	1993	3	32	FLAMMABLE LIQUIDS, N.O.S. (CRYSTIC SOULTION)	I or II or III
CUPRINOL WOOD PRESERVER	1306	3	38	WOOD PRESERVATIVES, LIQUID	II or III
DECOLORIZER SOLUTION	1993	3	- 18	FLAMMABLE LIQUID, N.O.S. (DECOLORIZER SOLUTION)	Marine pollutant I or II or III
DICHLOROETHANE GPR	1184	3 & 6.1	13	ETHYLENE DICHLORIDE	II
DICHLOROETHYLENE	1150	3	6	1,2-DICHLOROETHYLENE	II
DIETHYL ETHER	1155	3	-40	DIETHYL ETHER OR ETHYL ETHER	I

DIMETHYL DISULPHIDE	2381	3	15	DIMETHYL DISULPHIDE	II
DIMETHYL SULPHIDE	1164	3	-37	DIMETHYL SULPHIDE	N/A
DOW CORNING CATALYST	1993	3	25	FLAMMABLE LIQUID, N.O.S. (DOW CORNING CATALYST)	I or II or III
DPX MOUNTING MEDIUM	1992	3 & 6.1	24	FLAMMABLE LIQUID,TOXIC,N.O.S. (XYLENE MIXTURE)	Marine Pollutant I or II or III
DURAPIPE CLEANER	1193	3	-1	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
DURAPIPE SOLVENT	1133	3	-4	ADHESIVES	I or II or III
DURAPIPE SOLVENT CEMENT	1133	3	4	ADHESIVES	I or II or III
EPOXY ADHESIVE	1133	3	18	ADHESIVES	I or II or III
ESSO AVIATION KEROSENE	SEE AVIATION KEROSENE				
ETHANOL	1170	3	12	ETHANOL OR ETHANOL SOLUTION	II
ETHOXYETHANOL	1171	3	40	ETHYLENE GLYCOL MONOETHYL ETHER	III
ETHYL ACETATE HIPERSOLV	1173	3	-4	ETHYL ACETATE	II
ETHYL ALCOHOL	1170	3	7	ETHYL ALCOHOL OR ETHYL ALCOHOL SOLUTION	II
ETHYL CHLORIDE	1184	3 & 6.1	13	ETHYLENE DICHLORIDE	II
ETHYLENE DICHLORIDE	1184	3 & 6.1	13	ETHYLENE DICHLORIDE	II
EUPARAL STAIN	1993	3	30	FLAMMABLE LIQUID, N.O.S. (EUPARAL STAIN)	I or II or III
EVOSTICK & EVOSTICK RESIN	1133	3	13	ADHESIVES	I or II or III
EVOSTICK CLEANER	1263	3	18	PAINT RELATED MATERIAL	Marine Pollutant I or II or III
EVOSTICK TIMEBOND IMPACT ADHESIVE	1133	3	38	ADHESIVES	III
EVO-STIK 528	1133	3	- 25	ADHESIVES CONTAINING FLAMM LIQ	I or II or II / I or II
EVO-STIK 613	1133	3	- 25	ADHESIVES	I or II or II / I or II
EVO-STIK CLEANER 141	1133	3	- 18	ADHESIVES	I or II or II / I or II
EVO-STIK CLEANER 191/S	1268	3	- 25	PETROLEUM DISTILLATES, N.O.S. (EVO-STIK CLEANER)	Marine pollutant I or II or III
EVO-STIK TIME BOND	1133	3	- 25	ADHESIVES	I or II or III
FAST GRIP ADHESIVE	1133	3	13	ADHESIVES	I or II or III
FELT ADHESIVE	1999	3	40	TARS, LIQUID	II or III
FILTER COUNT	1993	3	48	FLAMMABLE LIQUID, N.O.S. (FILTER COUNT)	I or II or III
FINNIGANS WAX OIL	1263	3	36	PAINT	Marine Pollutant III
FORMALDEHYDE 37-40%	1198	3 & 8	32	FORMALDEHYDE SOLUTION, FLAMMABLE	III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
FOSROC THINNER / CLEANER	1268	3	44	PETROLEUM DISTILLATES, N.O.S. (THINNER/CLEANER)	Marine Pollutant I or II or III
GALVAFROID	1263	3	41	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT	1202	3	37-55	GAS OIL or DIESEL FUEL or HEATING OIL, LIGHT	III
GASOLINE	1203	3	-40	GASOLINE	II
GILFLEX SOLVENT WELD	1133	3	25	ADHESIVES	I or II or III
GLOSS PAINT (ENAMEL)	1263	3	38	PAINT	Marine Pollutant I or II or III
GLYCEEL	1993	3	20	FLAMMABLE LIQUID, N.O.S. (GLYCEEL)	I or II or III
GRIPFILL	1133	3	36	ADHESIVES	III
HAEMATOXYLIN STAINING SOLUTION	1170	3	30	ETHANOL OR ETHANOL SOLUTION OR ETHYL ALCOHOL OR ETHYL ALCOHOL SOLUTION	II or III
HAMMERITE BRUSH CLEANER / THINNERS	1263	3	25	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
HAMMERITE METAL / SATIN / SMOOTH	1263	3	25	PAINT	Marine Pollutant I or II or III
HAMMERITE NO 1 RUST BEATER	1263	3	35	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
HEPTANE	1206	3	- 4	HEPTANES	II
HEXANE	1208	3	-18	HEXANES	II
HIONIC FLUOR	1993	3	48	FLAMMABLE LIQUID, N.O.S. (HIONIC FLUOR)	I or II or III
HISTO-CLEAR TISSUE CLEARING MEDIUM	2052	3	43	DIPENTENE	Marine Pollutant III
I/SPEED 340 BASECOAT BROWN	1263	3	31	PAINT	Marine Pollutant I or II or III
I/SPEED 340 TOPCOAT RED	1263	3	26	PAINT	Marine Pollutant I or II or III
IMPACT ADHESIVE	1133	3	-25	ADHESIVES	I or II or III
INSTAGEL	1294	3	7	TOLUENE	II

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
INT. EQUIPMENT CLEANER	1263	3	30	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
INTERBOND LOW TEMP C/AGENT	1263	3	23	PAINT	Marine Pollutant I or II or III
INTERBOND SIGNAL GREEN BASE	1263	3	23	PAINT	Marine Pollutant I or II or III
INTERFINE FINISH, INT ORANGE	1263	3	33	PAINT	Marine Pollutant I or II or III
INTERFINE, BRIGHT WHITE	1263	3	35	PAINT	Marine Pollutant I or II or III
INTERGARD CURING AGENT	1263	3	25	PAINT	Marine Pollutant I or II or III
INTERGARD FINISH	1263	3	23	PAINT	Marine Pollutant I or II or III
INTERGARD POTABLE WATER	1263	3	25	PAINT	Marine Pollutant I or II or III
INTERLAC 665 ALKYD FINISH	1263	3	39	PAINT	Marine Pollutant I or II or III
INTERLAC FINISH	1263	3	35	PAINT	Marine Pollutant I or II or III
INTERLAC FR UNDERCOAT, WHITE	1263	3	35	PAINT	Marine Pollutant I or II or III
INTERLAC UNDERCOAT, GREY	1263	3	35	PAINT	Marine Pollutant I or II or III
INTERLAC UNDERCOAT, WHITE	1263	3	39	PAINT	Marine Pollutant I or II or III
INTERLAC VARNISH HVA 022	1263	3	35	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
INTERNATIONAL THINNER GTA 004	1263	3	38	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
INTERNATIONAL THINNER GTA 713	1263	3	28	PAINT RELATED MATERIALS	Marine Pollutant I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
INTERPRIME MULTIPRIME I	1263	3	35	PAINT	Marine Pollutant I or II or III
INTERSHIELD NEW BUILDING BRONZE BASE	1263	3	25	PAINT	Marine Pollutant I or II or III
INTERSHIELD NEW BUILDING CURING AGENT	1263	3	20	PAINT RELATED MATERIAL	Marine Pollutant I or II or III
INTERTHANE CURING AGENT	1263	3	33	PAINT	Marine Pollutant I or II or III
INTERTHERM HT ALUMINIUM	1263	3	23	PAINT	Marine Pollutant I or II or III
IODOPROPANES	2392	3	42	IODOPROPANES	III
ISOAMYL ALCOHOL ACS REAGENT	1105	3	45	PENTANOLS	II or III
ISOPENTANE	1265	3	-18	PENTANES	I or II
ISOPROPYL ALCOHOL	1219	3	12	ISOPROPYL ALCOHOL	II
JOINTING COMPOUND	1133	3	23	ADHESIVES	I or II or III
KEROSENE	1223	3	43	KEROSENE	
LINSEED OIL	1263	3	36	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
MARLEY EMBOND 168 EXTRA	1133	3	-18	ADHESIVES	I or II or III
MATT BLACK	1263	3	35	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
MESOWAX	1993	3	15	FLAMMABLE LIQUID, N.O.S. (MESOWAX)	I or II or III
METHANOL	1230	3 & 6.1	12	METHANOL	II
METHYLALCOHOL	1230	3 & 6.1	12	METHANOL	II
METHYL ETHYL KETONE (ANTIFREEZE)	1193	3	-1	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
METHYLATED SPIRIT	1170	3	12	ETHANOL OR ETHANOL SOLUTION OR ETHYL ALCOHOL OR	II
MOLAR MIXTURE	1230	3 & 6.1	20	METHANOL	II
MOTOR SPIRIT	1203	3	-40	MOTOR SPIRIT	Marine Pollutant II
MULTIPRIME	1263	3	35	PAINT	Marine Pollutant I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
NALCO 537 - DA	1993	3	49	FLAMMABLE LIQUID, N.O.S. (NALCO)	I or II or Iil
NAPTHA SOLVENT	1268	3	23	PETROLEUM DISTILLATES, N.O.S. (NAPTHA)	Marine Pollutant l or II or III
NEOPRENE ADHESIVE	1133	3	18	ADHESIVES	I or II or III
NEUTRAL MOUNTING MEDIUM	1993	3	38	FLAMMABLE LIQUID, N.O.S. (CONTAINS SOLVENT)	I or II or III
NIKWAX	1263	3	54	PAINT	Marine Pollutant lll
OPTIPHASE NP	1307	3	23	XYLENES	II
OPTISOLVE	2924	3 & 8	4	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (TOLUENE AND	Marine Pollutant II
PAINT THINNERS	1263	3	28	PAINT RELATED MATERIALS	I or II or III / III
PENTANE	1265	3	-18	PENTANES	I or II
PETROL	1203	3	-40	PETROL	Marine Pollutant II
PETROLEUM ETHER	1268	3	-46	PETROLEUM DISTILLATES, N.O.S. (CONTAINS N-PENTANE, HEXANE)	Marine Pollutant I or II or III
PH INDICATOR	1219	3	12	ISOPROPANOL OR ISOPROPYL ALCOHOL	II
PICOFLUOR SCINTILLATION FLUID	1993	3	22	FLAMMABLE LIQUID, N.O.S. (PICOFLUOR)	I or II or III
PLUS GAS	1993	3	30	FLAMMABLE LIQUID, N.O.S. (HYDROCARBON DISTILLATE)	lll
POLYCLENS	1263	3	28	PAINT RELATED MATERIALS	Marine Pollutant l or II or III
PR-1422A1/2,A2,A4 BASE	1133	3	- 4	ADHESIVES	I or II or III
PRESERVATIVE, TIMBER	1306	3	38	WOOD PRESERVATIVES, LIQUID	Marine Pollutant II or III
PRIMER PAINT	1263	3	39	PAINT	Marine Pollutant l or II or III
PROPAN-2-OL	1219	3	12	ISOPROPANOL OR ISOPROPYL ALCOHOL	II
PROPYLENE OXIDE	1280	3	-29	PROPYLENE OXIDE	I
PYRIDINE	1282	3	17	PYRIDINE	II
RED GRAPHITE PIPE COMPOUND	1263	3	18	PAINT RELATED MATERIAL	Marine Pollutant I or II or III
RED OXIDE / ZINC CHROMATE	1263	3	38	PAINT / PAINT RELATED MATERIALS	Marine Pollutant l or II or III
REPAIR ADHESIVE, BOSTIK 2402	1133	3	48	ADHESIVES	lll

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
RESIN SOLUTION	1866	3	-4	RESIN SOLUTION	Marine pollutant I or II or III
RONSEAL 2 PART WOOD FILLER	3269	3	28	POLYESTER RESIN KIT	Marine pollutant ll or lll
RUBEROID LAP CEMENT	1133	3	44	ADHESIVES	I or II or III
SADOLIN HOLDEX	1263	3	40	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
SAFETY CLEAN SOLVENT	1223	3	31	KEROSENE	III
SAFETY WALK ADHESIVE	1294	3	7	TOLUENE	II
SAFETY WALK EDGE SEALER	1294	3	7	TOLUENE	II
SAFRANIN SOLUTION	1170	3	18	ETHANOL OR ETHANOL SOLUTION OR ETHYL ALCOHOL OR	II or III
SARNOFIL CLEANER	1300	3	38	TURPENTINE SUBSTITUTE	Marine Pollutant II or III
SCOTCHGRIP	1133	3	- 23	ADHESIVES	I or II or III
SIGMA-SIL-A	1993	3	30	FLAMMABLE LIQUID, N.O.S.	I or II or III / III
SIGMULTO BASECOAT NO 2	1263	3	38	PAINT, PAINT RELATED MATERIALS	Marine Pollutant I or II or III
SIKKENS CETOL HLS	1263	3	56	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
SILICON CLEAR SEALER	1133	3	18	ADHESIVES	I or II or III
SILICONE SE-30	1133	3	18	ADHESIVES	I or II or III
SKC-S SOLVENT BASED CLEANER/REMOVER	1993	3	7	FLAMMABLE LIQUID, N.O.S. (CONTAINS SOLVENT)	I or II or III
SOLADEX	1866	3	33	RESIN SOLUTION	I or II or III
SOLVENT CLEANERS	1193	3	-1	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
SOLVITE	1265	3	-18	PENTANES	I or II
STOKES THINNERS METHYL ETHYL KETONE	1193	3	- 21	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
STRAND RESIN B	1866	3	32	RESIN SOLUTION	I or II or III
STYCCOBOND F60	1133	3	- 18	ADHESIVES	I or II or III
STYCCOBOND F61	1133	3	- 17	ADHESIVES	I or II or III
SURGICAL SPIRIT	1170	3	18	ETHANOL OR ETHANOL SOLUTION OR ETHYL ALCOHOL OR	II or III
TANGIT DURAPIPE ADHESIVE	1133	3	23	ADHESIVES	I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
TANKCOTE	1999	3	32	TARS, LIQUID	II or III / III
TAUTENING DOPE	1263	3	22	PAINT RELATED MATERIALS	Marine Pollutant I or II or III
TEMEO MOLECULAR BIOLOGY REAGENT	2372	3	10	1,2-DI(DIMETHYLAMINO) ETHANE	II
TENSOL PERSPEX CEMENT	1247	3	8	METHYL METHACRYLATE MONOMER, STABILIZED	II
TERRETHANE 35 PRIMER	1263	3	23	PAINT / PAINT RELATED MATERIALS	Marine Pollutant I or II or III
TIPPEX	1993	3	30	FLAMMABLE LIQUID N.O.S. (ALIPHATIC HYDROCARBONS)	III
TOLUENE	1294	3	7	TOLUENE	II
TOLUENE	1294	3	7	TOLUENE	II
TRIMITE PAINT	1263	3	38	PAINT	Marine Pollutant I or II or III
TURPENTINE SUBSTITUTE	1300	3	21	TURPENTINE SUBSTITUTE	II or III
UHU ALL PURPOSE CLEAR	1133	3	23	ADHESIVES	I or II or III
UNDERCOAT PAINT	1263	3	38	PAINT	Marine Pollutant I or II or III
VARNISH, POLYURETHANE	1263	3,3	32	PAINT	Marine Pollutant I or II or III
WAXOYL	1263	3	43	PAINT / PAINT RELATED MATERIALS	Marine Pollutant I or II or III
WD-40 BULK LIQUID	1993	3	+ 43	FLAMMABLE LIQUIDS, N.O.S. (WD-40 BULK LIQUID)	III
WHITE SPIRIT	1300	3	38	TURPENTINE SUBSTITUTE	Marine Pollutant II or III
WILFORDS CLEANING FLUID	1193	3	-1	ETHYL METHYL KETONE OR METHYL ETHYL KETONE	II
WOOD PRESERVATIVES	1306	3	38	WOOD PRESERVATIVES, LIQUID	II or III
XYLENE	1307	3	17	XYLENES	II or III
XYLENES	1307	3	20	XYLENES	II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 4.1 - FLAMMABLE SOLIDS					
ACETOCARMINE	1344	4.1		TRINITROPHENOL,WETTED	I
BRUMMER QUICK FILL	1325	4.1		FLAMMABLE SOLID, ORGANIC, N.O.S.	II or III
DINITROPHENOL	1320	4.1 & 6.1		DINITROPHENOL, WETTED	I
MATCHES	1944	4.1		MATCHES, SAFETY	III
NAPHTHALENE	1334	4.1		NAPHTHALENE, REFINED	III
PARAFORMALDEHYDE	2213	4.1		PARAFORMALDEHYDE	III
PITRIC ACID (IN SOLUTION)	1344	4.1		PICRIC ACID, WETTED (> 30% WATER) OR	I
RESIN PUTTY	1325	4.1		FLAMMABLE SOLID,ORGANIC, N.O.S. (RESIN)	Marine Pollutant II or III
SHOE POLISH	3175	4.1		SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (1,2,4-	II

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 4.2 - SPONTANEOUSLY					
COMBUSTIBLE					
CHARCOAL, ACTIVATED	1362	4.2		CARBON, ACTIVATED	III
CHARCOAL, WOOD POWDER	1361	4.2		CARBON	II or III
OXOID ANAEROGEN	3088	4.2		SELF HEATING SOLID, ORGANIC, N.O.S. (OXOID	Marine Pollutant II
SODIUM DITHIONITE	1384	4.2		SODIUM DITHIONITE OR SODIUM HYDROSULPHITE	II
RAGS, OILY	1856	4.2		RAGS, OILY	

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 4.3 - DANGEROUS WHEN					
WET					
SODIUM BOROHYDRIDE	1426	4.3		SODIUM BOROHYDRIDE	I
ZINC POWDER or ZINC DUST	1436	4.3 & 4.2		ZINC POWDER or ZINC DUST	I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 5.1 - OXIDISING					
SUBSTANCES					
AMMONIUM NITRATE PRILLS	1942	5.1		AMMONIUM NITRATE	III
AMMONIUM PERSULPHATE	1444	5.1		AMMONIUM PERSULPHATE	III
BORN BLONDE HAIR DYE	2984	5.1		HYDROGEN PEROXIDE, AQUEOUS SOLUTION	III
CALCIUM HYPOCHLORITE	1748	5.1		CALCIUM HYPOCHLORITE MIXTURE,DRY	II
CALCIUM NITRATE	1454	5.1		CALCIUM NITRATE	III
COBALT NITRATE HEXAHYDRATE	1477	5.1		NITRATES, INORGANIC, N.O.S. (COBALT NITRATE HEXAHYDRATE)	Marine Pollutant II or III
DICHLOROISOCYANURIC ACID	2465	5.1		DICHLOROISOCYANURIC ACID, SALTS	Marine Pollutant II
DRAEGER SMOKE HOODS	3356	5.1		OXYGEN GENERATOR, CHEMICAL	II
FIR0805 MICRO - K	1479	5.1		OXIDISING SOLID, N.O.S. (FIRE SUPPRESSION SYSTEM)	I or II or III
FUMAX SMOKE EMITTERS	1479	5.1		OXIDISING SOLID, N.O.S. (POTASSIUM CHLORATE)	I or II or III
HICLON TABLETS	1748	5.1		CALCIUM HYPOCHLORITE MIXTURE, DRY	Marine Pollutant II
HYDROGEN PEROXIDE	2014	5.1 & 8		HYDROGEN PEROXIDE, AQUEOUS SOLUTION	II
MAGNESIUM NITRATE	1474	5.1		MAGNESIUM NITRATE	III
MAGNESIUM PERCHLORATE	1475	5.1		MAGNESIUM PERCHLORATE	II
PERCHLORIC ACID >50%	1873	5.1 & 8		PERCHLORIC ACID	I
POTASSIUM CHLORATE	1485	5.1		POTASSIUM CHLORATE	II
POTASSIUM IODATE	1479	5.1		OXIDISING SOLID, N.O.S. (POTASSIUM IODATE)	Marine Pollutant I or II or III
POTASSIUM NITRATE	1486	5.1		POTASSIUM NITRATE	III
POTASSIUM NITRITE	1488	5.1		POTASSIUM NITRITE	II
POTASSIUM PERMANGANATE	1490	5.1		POTASSIUM PERMANGANATE	II
POTASSIUM PERSULPHATE	1492	5.1		POTASSIUM PERSULPHATE	III
SANITISATION TABLETS	See DICHLOROISOCYAN URIC ACID				
SODIUM CHLORATE	1495	5.1		SODIUM CHLORATE	II
SODIUM COBALTINITRITE	1479	5.1		OXIDISING SOLID, N.O.S. (SODIUM COBALNITRITE)	Marine Pollutant I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
SODIUM DICHLOROISOCYANURATE	2465	5.1		DICHLOROISOCYANURICACID, DRY	II
SODIUM NITRATE	1498	5.1		SODIUM NITRATE	III
POTASSIUM NITRATE AND SODIUM NITRITE MIXTURE	1487	5.1		POTASSIUM NITRATE AND SODIUM NITRITE MIXTURE	II
SODIUM NITRITE	1500	5.1 & 6.1		SODIUM NITRITE	III
STRONTIUM NITRATE	1507	5.1		STRONTIUM NITRATE	III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 5.2 - ORGANIC PEROXIDES					
CATALYST 'M' HARDENER	3105	5.2		ORGANIC PEROXIDE TYPE D, LIQUID	
ETHYL METHYL KETONE PEROXIDE	3105	5.2		ORGANIC PEROXIDE TYPE D, LIQUID	
ORGANIC PEROXIDE LIQUID	3101	5.2		ORGANIC PEROXIDE TYPE B, LIQUID	See SP181
ORGANIC PEROXIDE TYPE D, LIQUID	3105	5.2		ORGANIC PEROXIDE TYPE D, LIQUID	PSN required

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 6.1 - TOXIC SUBSTANCES					
2-MERCAPTOETHANOL	2966	6.1		THIOGLYCOL	II
ACROLEIN	1092	6.1 & 3		ACROLEIN, STABILIZED	Marine Pollutant I
ACRYLAMIDE	2074	6.1		ACRYLAMIDE, SOLID	III
ACTIDIONE	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (ACTIDIONE)	Marine Pollutant I or II or III
ALLYLTHIOUREA	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (ALLYLTHIOUREA)	Marine Pollutant I or II or III
AMMONIUM MOLYDBATE	2811	6.1		TOXIC SOLIDS, ORGANIC, N.O.S. (AMMONIUM MOLYDBATE)	Marine Pollutant I or II or III
ANILINE OXALATE	1547	6.1		ANILINE	II
ANTIMONY POTASSIUM TARTRATE	1551	6.1		ANTIMONY POTASSIUM TARTRATE	III
ARMAFINISH ADHESIVE	1710	6.1		TRICHLOROETHYLENE	III
ARSENIC ACID (NA SALT - LIQUID)	1553	6.1		ARSENIC ACID, LIQUID	I
BARIUM CHLORIDE	1564	6.1		BARIUM COMPOUND, N.O.S. (BARIUM CHLORIDE)	Marine Pollutant II or III
BELZONA SOLIDIFIER	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (BISPHENOL A-EPICHLOROHYDRIN)	Marine Pollutant I or II or III
BOSTIK ADHESIVE HARDENER	2206	6.1		ISOCYANATES, TOXIC, N.O.S. (BOSTIK)	Marine Pollutant II or III
BOSTIKURE D10	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (BOSTIKURE)	Marine Pollutant I or II or III
BROMOFORM GPR	2515	6.1		BROMOFORM	Marine Pollutant III
CACODYLIC ACID	1572	6.1		CACODYLIC ACID	II
CADMIUM COMPOUNDS	2570	6.1		CADMIUM COMPOUND	Marine Pollutant I or II or III
CARBOLIC ACID SOLUTIONS	2821	6.1		PHENOLSOLUTION	II or III
CARBON TETRACHLORIDE	1846	6.1		CARBON TETRACHLORIDE	Marine Pollutant II

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CHLORIDE COLOUR REAGENT	2929	6.1 & 3		TOXIC LIQUID, FLAMMABLE, ORGANIC, N.O.S. (CHLORIDE REAGENT)	Marine Pollutant I or II or III
CHLOROFORM	1888	6.1		CHLOROFORM	III
COPPER (II) SULPHATE 5-HYDRATE	3288	6.1		TOXIC SOLID, INORGANIC, N.O.S. (COPPER (LL) SULPHATE 5-HYDRATE)	Marine Pollutant I or II or III
DIBROMOMETHANE	2664	6.1		DIBROMOMETHANE	III
DICHLOROMETHANE	1593	6.1		DICHLOROMETHANE	III
DINITRO-FLUOROBENZENE	2810	6.1		TOXIC LIQUID, ORGANIC, N.O.S. (DINITRO-FLUOROBENZENE)	Marine Pollutant I or II or III
ETHIDIUM BROMIDE	2810	6.1		TOXIC LIQUID, ORGANIC, N.O.S. (ETHIDIUM BROMIDE)	Marine Pollutant I or II or III
DRIERITE	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (DRIERITE)	Marine Pollutant I or II or III
GENKLENE	2831	6.1		1,1,1-TRICHLOROETHANE	III
GILFLEX CLEANING FLUID	1710	6.1		TRICHLOROETHYLENE	III
GLUTARIC DIALDEHYDE SOLUTION	2927	6.1 & 8		TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (GLUTARIC DIALDEHYDE SOLUTION)	II
GLUTERALDEHYDE	2810	6.1		TOXIC LIQUID, ORGANIC, N.O.S. (GLUTERALDEHYDE)	Marine Pollutant I or II or III
HAMMERITE PAINT THINNERS	2810	6.1		TOXIC, LIQUID, ORGANIC N.O.S. (HAMMERITE)	Marine Pollutant I or II or III
HYDROXYETHYL METHACRYLATE	2810	6.1		TOXIC LIQUID, ORGANIC, N.O.S. (HYDROXYETHYL METHACRYLATE)	Marine Pollutant I or II or III
HYLOMAR	2810	6.1		TOXIC LIQUID, ORGANIC, N.O.S. (HYLOMAR)	Marine Pollutant I or II or III
IODINE	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (IODINE)	Marine Pollutant I or II or III
ISATIN	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (ISATIN)	Marine Pollutant I or II or III
LEAD CITRATE	2291	6.1		LEAD COMPOUND, SOLUBLE, N.O.S. (LEAD CITRATE)	Marine Pollutant III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
LACTOPHENOL BLUE SOLUTION	2821	6.1		PHENOLSOLUTION	II
MERCAPTOETHANOL(2-PRE)	2966	6.1		THIOGLYCOL	II
MERCURIC CHLORIDE	1624	6.1		MERCURIC CHLORIDE	Marine Pollutant II
MERCURIC IODIDE (SOLID)	1638	6.1		MERCURY IODIDE	Marine Pollutant II
MERCURIC IODIDE (LIQUID)	1638	6.1		MERCURY IODIDE	Marine Pollutant II
MERCURIC NITRATE	1625	6.1		MERCURIC NITRATE	Marine Pollutant II
METHYLIODIDE	2644	6.1		METHYLIODIDE	I
METOL	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (METOL)	Marine Pollutant I or II or III
M-PHENYLENEDIAMINE	1673	6.1		PHENYLENEDIAMINES	III
NINHYDRIN CRYSTALLINE	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (NINHYDRIN CRYSTALLINE)	Marine Pollutant I or II or III
NITROMORS PAINT STRIPPER	1710	6.1		TRICHLOROETHYLENE	III
NITROPHENOLS	1663	6.1		NITROPHENOLS	III
N.E.D.D.	2811	6.1		TOXIC SOLID, ORGANIC, N.O.S. (N.E.D.D.)	Marine Pollutant I or II or III
O-PHTHALDEHYDE	2928	6.1 & 8		TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S. (1,2-	II
O - CRESOL RED, STAIN	2076	6.1 & 8		CRESOLS, LIQUID	II
OSMIUM TETROXIDE	2471	6.1		OSMIUM TETROXIDE	Marine Pollutant I
PHENOL, SOLID	1671	6.1		PHENOL, SOLID	II
PHENOL SOLUTIONS	2821	6.1		PHENOLSOLUTION	II or III
PHENYLTHIOUREA	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (PHENYL THIOUREA)	Marine Pollutant I or II or III
PHENYLMERCURY ACETATE	1674	6.1		PHENYLMERCURIC ACETATE	Marine Pollutant II
POLYURETHANE FOAMS (STRANDS)	2487	6.1 & 3	51	PHENYL ISOCYANATE	I
POTASSIUM ANTIMONY TARTRATE	1551	6.1		ANTIMONY POTASSIUM TARTRATE	III
POTASSIUM CYANIDE	1680	6.1		POTASSIUM CYANIDE, SOLID	Marine Pollutant I
POTASSIUM DICHROMATE	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (POTASSIUM DICHROMATE)	Marine Pollutant I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
POTASSIUM TELLURITE	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (POTASSIUM TELLURITE)	Marine Pollutant I or II or III
P-PHENYLENEDIAMINE FREE BASE	1673	6.1		PHENYLENEDIAMINES	lll
SEMICARBAZIDE HYDROCHLORIDE	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (SEMICARBAZIDE HYDROCHLORIDE)	Marine Pollutant I or II or III
SODIUM AZIDE	1687	6.1		SODIUM AZIDE	ll
SODIUM CACODYLATE	1688	6.1		SODIUM CACODYLATE	Marine Pollutant II
SODIUM CARBONATE ANHYDROUS	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (SODIUM CARBONATE)	Marine Pollutant I or II or III
SODIUM FLUOROSILICATE	2674	6.1		SODIUM FLUOROSILICATE	lll
SODIUM HEXAFLUOROSILICATE	2674	6.1		SODIUM FLUOROSILICATE	lll
SODIUM METASILICATE	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (SODIUM METASILICATE)	Marine Pollutant I or II or III
SODIUM NITROPRUSSIDE	1588	6.1		CYANIDES, INORGANIC, SOLID, N.O.S. (SODIUM NITROPRUSSIDE)	Marine Pollutant I or II or III
SULFANILMIDE	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (SULFANILMIDE)	Marine Pollutant I or II or III
TENSOL CEMENT NO 12	1593	6.1		DICHLOROMETHANE	lll
TETRACHLOROETHYLENE TECHNICAL	1897	6.1		TETRACHLOROETHYLENE	Marine Pollutant lll
THIOSEMICARBAZIDE	2811	6.1		TOXIC, SOLID, ORGANIC, N.O.S. (THIOSEMICARBAZIDE)	Marine Pollutant I or II or III
TOLUIDINES LIQUID	1708	6.1		TOLUIDINES, LIQUID	ll
TOLUIDINES, SOLID	3451	6.1		TOLUIDINES, SOLID	ll
TRICHLOROETHANE	2831	6.1		1,1,1-TRICHLOROETHANE	lll
TRICHLOROETHYLENE	1710	6.1		TRICHLOROETHYLENE	lll
WAX REMOVER	2831	6.1		1,1,1-TRICHLOROETHANE	lll

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 6.2 - INFECTIOUS SUBSTANCES					
CLINICAL WASTE - NOS	3291	6.2		CLINICAL WASTE, UNSPECIFIED, N.O.S. (SHARPS)	II
QUANTI-CULT	3373	6.2		BIOLOGICAL SUBSTANCE, CATEGORY B	

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 7 - RADIOACTIVE					
MATERIALS					
CARBON 14		7		ADVICE TO BE SOUGHT FROM BAS	
METHYL THYMADINE		7		RADIO PROTECTION OFFICER	
TRITIATED WATER		7			

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 8 - CORROSIVES					
ACETIC ACID, GLACIAL or ACETIC ACID SOLUTION, more than 80% acid, by mass	2789	8 & 3		ACETIC ACID, GLACIAL	II
ACETIC ACID SOLUTION not less than 50% but not more than 80% acid, by mass	2790	8		ACETIC ACID, SOLUTION	II
ACETIC ACID SOLUTION more than 10% and less than 50% acid, by mass	2790	8		ACETIC ACID, SOLUTION	III
AEROLITE 306 ADHESIVE	1779	8		FORMIC ACID	II
ALTROFIX A19 PART B	1760	8		CORROSIVE LIQUID, N.O.S. (ALTROFIX)	Marine Pollutant I or II or III
AMMONIA SOLUTION relative density between 0.880 and 0.957 at 15°C in water, with more than 10% but not more than 35% ammonia by mass	2672	8		AMMONIA SOLUTION	Marine Pollutant III
AMMONIUM HYDROXIDE	2672	8		AMMONIA SOLUTION	Marine Pollutant III
BAKERS FLUID NO 3	1760	8		CORROSIVE LIQUID, N.O.S. (BAKERS FLUID)	I or II or III
BATTERIES, WET, ACID FILLED	2794	8		BATTERIES, WET, FILLED WITH ACID	
BATTERIES, WET, NON SPILLABLE	2800	8		BATTERIES, WET, NON-SPILLABLE	
SULPHURIC ACID with not more than 51% acid or BATTERY FLUID, ACID	2796	8		SULPHURIC ACID OR BATTERY FLUID, ACID	II
BLEACH	1791	8		HYPOCHLORITE SOLUTION	II or III
BROMINE SOLUTIONS	1744	8 & 6.1		BROMINE SOLUTION	I
CAUSTIC SODA, SOLID	1823	8		SODIUM HYDROXIDE, SOLID	II
CAUSTIC SODA LIQUOR	1824	8		SODIUM HYDROXIDE SOLUTION	II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CHROMIUM TRIOXIDE SOLUTION	1775	8		FLUOROBORIC ACID	II
CLEANING FLUID (CLARKS)	1824	8		SODIUM HYDROXIDE SOLUTION	II or III
COLOUR DEVELOPER REPLENISHER	1760	8		CORROSIVE LIQUID, N.O.S. (CONTAINS POTASSIUM HYDROXIDE)	I or II or III
DEVCON PLASTIC STEEL	2079	8		DIETHYLENETRIAMINE	II
DISHWASHER DETERGENT	SEE SODIUM HYDROXIDE SOLUTION				
DISINFECTANTS	1903	8		DISINFECTANT, LIQUID, CORROSIVE, N.O.S.	I or II or III
DISODIUM TRIOXOSILICATE	3253	8		DISODIUM TRIOXOSILICATE	
DIVERFORCE L4	1824	8		SODIUM HYDROXIDE SOLUTION	II or III
EKTACHROME	3266	8		CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	III
EPOXY HARDENER	2922	8 & 6.1		CORROSIVE LIQUID, TOXIC, N.O.S. (POLYALKLENEAMINE)	I or II or III
EPOXY RESIN ADHESIVE	2735	8		AMINES, LIQUID, CORROSIVE, N.O.S.	III
ETHANOLAMINE	2491	8		ETHANOLAMINE	III
FERRIC CHLORIDE, ANHYDROUS	1773	8		FERRIC CHLORIDE, ANHYDROUS	III
FERRIC CHLORIDE, SOLUTION	2582	8		FERRIC CHLORIDE SOLUTION	III
FORMALDEHYDE SOLUTION with not less than 25% formaldehyde	2209	8		FORMALDEHYDE SOLUTION	III
FORMIC ACID	3412	8		FORMIC ACID	II
FYRITE FLUID	1814	8		POTASSIUM HYDROXIDE SOLUTION	II or III
GLUTERALDEHYDE SOLUTION	3265	8		CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.	III
HARPIC CLEANER	1823	8		SODIUM HYDROXIDE, SOLID	II
HYDROCHLORIC ACID	1789	8		HYDROCHLORIC ACID	II or III
HYDROFLUORIC ACID SOLUTION	1790	8 & 6.1		HYDROFLUORIC ACID	I or II
IMIDAZOLE APPROX 99%	3263	8		CORROSIVE SOLID, BASIC, ORGANIC, N.O.S. (IMIDAZOLE)	Marine Pollutant I or II or III
IODINE	3495	8 & 6.1		IODINE	III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
IRON (111) CHLORIDE	1773	8		FERRIC CHLORIDE, ANHYDROUS	III
JENOLITE	2796	8		BATTERY FLUID, ACID OR SULPHURIC ACID	II
KATHON	1760	8		CORROSIVE LIQUID, N.O.S. (KATHON)	III
KODALITH LIQUID DEVELOPER	3266	8		CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S.	III
LANCERCLEAN	1719	8		CAUSTIC ALKALI LIQUID, N.O.S. (CONTAINS SODIUM	II or III
LANCERINSE AID RINSE ADDITIVE	2790	8		ACETIC ACID SOLUTION	II or III
LEAD ACID BATTERIES	2794	8		BATTERIES, WET, FILLED WITH ACID	
LITHIUM HYDROXIDE, SOLID	2680	8		LITHIUM HYDROXIDE	II
MACHINE DETERGENT L4	1824	8		SODIUM HYDROXIDE SOLUTION	II or III
MERCURY	2809	8		MERCURY	III
METAPHOSPHORIC ACID	1759	8		CORROSIVE SOLID, N.O.S. (METAPHOSPHORIC ACID)	I or II or III
METHANESULPHONIC ACID	2586	8		ARYLSULPHONIC ACIDS, LIQUID	III
NITRIC ACID RED FUMING	2032	8 & 5.1 & 6.1		NITRIC ACID, RED FUMING	I
NITRIC ACID	2031	8 & 5.1		NITRIC ACID	I or II
ORTHOPHOSPHORIC ACID	1805	8		PHOSPHORIC ACID SOLUTION	III
OVEN CLEANER	1823	8		SODIUM HYDROXIDE, SOLID	II
PERCHLORIC ACID < 50%	1802	8 & 5.1		PERCHLORIC ACID	II
PHOSPHORIC ACID SOLID	3453	8		PHOSPHORIC ACID, SOLID	III
PHOSPHORIC ACID SOLUTION	1805	8		PHOSPHORIC ACID SOLUTION	III
PHOSPHOROUS PENTOXIDE	1807	8		PHOSPHORUS PENTOXIDE	II
POTASSIUM HYDROXIDE	1813	8		POTASSIUM HYDROXIDE, SOLID	II
PROCESSING KIT - E6	1760	8		CORROSIVE LIQUID, N.O.S. (POTASSIUM HYDROXIDE 2-5%)	Marine Pollutant I or II or III
PROPIONIC ACID	1848	8		PROPIONIC ACID	III
PROTEIN ASSY KIT	2564	8		TRICHLOROACETIC ACID SOLUTION	II or III
PYRITE TEST FLUID	1814	8		POTASSIUM HYDROXIDE SOLUTION	II or III
PYRUVIC ACID	1760	8		CORROSIVE LIQUID, N.O.S. (PYRUVIC ACID)	Marine Pollutant I or II or III
QS REFILL PACK HARDENER	2735	8		AMINES, LIQUID, CORROSIVE, N.O.S.	Marine Pollutant I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
RATIONAL DECALCIFIER	1760	8		CORROSIVE LIQUID, N.O.S. (CONTAINS PHOSPHORIC ACID)	Marine Pollutant I or II or III
SEA SHIELD 79107	3265	8		CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S (CONTAINS PHOSPHORIC ACID ESTER)	Marine Pollutant I or II or III
SODA LIME	1907	8		SODA LIME	III
SODIUM BISULPHITE SOLUTION	2693	8		BISULPHITES, AQUEOUS SOLUTION, N.O.S. (SODIUM BISULPHITE SOLUTION)	Marine Pollutant III
SODIUM HYDROXIDE	1823	8		SODIUM HYDROXIDE, SOLID	II
SODIUM HYDROXIDE ANHYDROUS	1823	8		SODIUM HYDROXIDE, SOLID	II
SODIUM HYDROXIDE PELLETS	1823	8		SODIUM HYDROXIDE, SOLID	II
SODIUM HYDROXIDE SOLUTION	1824	8		SODIUM HYDROXIDE SOLUTION	II or III
SODIUM HYDROXIDE TECHNICAL	1823	8		SODIUM HYDROXIDE, SOLID	II
SODIUM HYPOCHLORITE SOLUTIONS	1791	8		HYPOCHLORITE SOLUTION	III
SODIUM SALT OF ETHYLENE DIAMINE	3267	8		CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (TETRASODIUM SOLUTION)	Marine Pollutant I or II or III
TASKI UNIFORTE (F22) STRIPPER	1760	8		CORROSIVE LIQUID, N.O.S. (MONOETHANOLAMINE AND SODIUM TRIOXYSILICATE)	I or II or III
SILVER BRAZING FLUX	3260	8		CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.	III
SODIUM SULPHIDE	1849	8		SODIUM SULPHIDE, HYDRATED	II
STANNIC CHLORIDE	1827	8		STANNIC CHLORIDE, ANHYDROUS	II
SULPHURIC ACID > 51%	1830	8		SULPHURIC ACID	II
SULPHURIC ACID < 51% ACID	2796	8		SULPHURIC ACID	II
TETRAMETHYLAMMONIUM HYDROX.	1835	8		TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION	II
THERMOMETER REVERSING	2809	8		MERCURY	III
THERMOMETERS - MERCURY	2809	8		MERCURY	III
TRICHLOROACETIC ACID, SOLID	1839	8		TRICHLOROACETIC ACID, SOLID	II

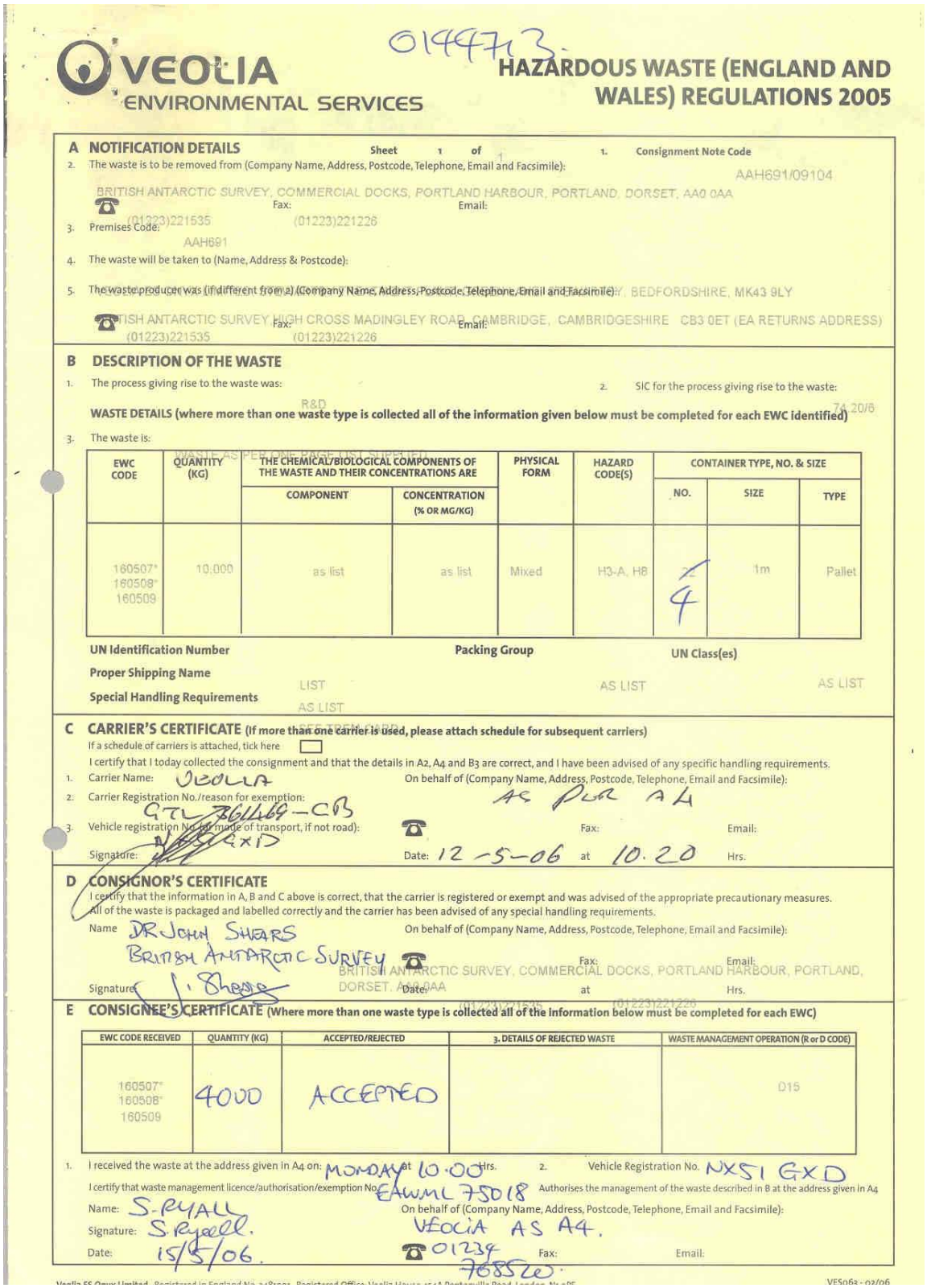
DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
TRICHLOROACETIC ACID, SOLUTION	2564	8		TRICHLOROACETIC ACID SOLUTION	II or III
ZINC CHLORIDE SOLUTION	1840	8		ZINC CHLORIDE SOLUTION	III
9-061 RUST REMOVER & BRIGHTENER	3264	8		CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S (CONTAINS PHOSPHORIC ACID)	Marine Pollutant I or II or III
9-108 ENGINE WATER TREATMENT	3266	8 & 6.1		CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (CONTAINS SODIUM HYDROXIDE AND SODIUM NITRITE)	Marine Pollutant I or II or III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
CLASS 9 - MISCELLANEOUS					
DANGEROUS					
SUBSTANCES					
AVIATION REGULATED LIQUID	3334	9		AVIATION REGULATED LIQUID, N.O.S. (CYANOACRYLATE	III
ARALDITE ADHESIVE PACKS	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	III
CONTECT DUCK-OIL	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	III
DANGEROUS GOODS IN MACHINERY or DANGEROUS GOODS IN APPARATUS	3363	9		DANGEROUS GOODS IN APPARATUS OR DANGEROUS GOODS IN MACHINERY	N/A
CREOSOTE	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	Marine Pollutant III
EPOXY CASTING RESIN	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	III
HEAT SINK COMPOUND	3077	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,	Marine Pollutant III
LIFEJACKETS	2990	9		LIFE SAVING APPLIANCES, SELF-INFLATING	
LIFE RAFTS	2990	9		LIFE SAVING APPLIANCES, SELF-INFLATING	
LITHIUM METAL BATTERIES	3090	9		LITHIUM METAL BATTERIES	II
LITHIUM METAL BATTERIES IN EQUIPMENT	3091	9		LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT or LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT	
LITHIUM ION BATTERIES	3480	9		LITHIUM ION BATTERIES	II
LITHIUM ION BATTERIES IN EQUIPMENT	3481	9		LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT	
BATTERIES, NICKEL-METAL HYDRIDE	3496	9		BATTERIES, NICKEL-METAL HYDRIDE	N/A
MARINE PLANKTON RECORDER TOWFISH	3363	9		DANGEROUS GOODS IN APPARATUS OR DANGEROUS GOODS IN MACHINERY	
SCINTILLATION LIQUID	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	III
SKIT	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	III

DESCRIPTION	UN NO	CLASS	F/P °c	PROPER SHIPPING NAME (PSN)	PACKING GROUP
ENGINE, INTERNAL COMBUSTION or VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL,	3166	9		ENGINE, INTERNAL COMBUSTION or VEHICLE, FLAMMABLE GAS POWERED or VEHICLE, FLAMMABLE LIQUID POWERED or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL,	N/A
TRITON X 100	3082	9		ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,	III
WASTE WHITE ASBESTOS	2590	9		WHITE ASBESTOS	III
WASTE BLUE ASBESTOS	2212	9		BLUE ASBESTOS	III
WASTE BROWN ASBESTOS	2212	9		BROWN ASBESTOS	III

Appendix 4: Hazardous Waste Transfer Documentation

Example of a completed Hazardous Waste consignment note



VEOLIA ENVIRONMENTAL SERVICES

0144713

HAZARDOUS WASTE (ENGLAND AND WALES) REGULATIONS 2005

A NOTIFICATION DETAILS Sheet 1 of 1

1. Consignment Note Code: AAH691/09104

2. The waste is to be removed from (Company Name, Address, Postcode, Telephone, Email and Facsimile):

BRITISH ANTARCTIC SURVEY, COMMERCIAL DOCKS, PORTLAND HARBOUR, PORTLAND, DORSET, AA0 0AA

☎ (01223)221535 Fax: (01223)221226 Email:

3. Premises Code: AAH691

4. The waste will be taken to (Name, Address & Postcode):

5. The waste producer was (if different from 2) (Company Name, Address, Postcode, Telephone, Email and Facsimile):

BEDFORDSHIRE, MK43 9LY

BRITISH ANTARCTIC SURVEY HIGH CROSS MADINGLEY ROAD, CAMBRIDGE, CAMBRIDGESHIRE CB3 0ET (EA RETURNS ADDRESS)

☎ (01223)221535 Fax: (01223)221226 Email:

B DESCRIPTION OF THE WASTE

1. The process giving rise to the waste was: R&D

2. SIC for the process giving rise to the waste: 74.20/6

WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

3. The waste is:

WASTE AS PER ONE-PAGE LIST SUPPLIED

EWC CODE	QUANTITY (KG)	THE CHEMICAL/BIOLOGICAL COMPONENTS OF THE WASTE AND THEIR CONCENTRATIONS ARE		PHYSICAL FORM	HAZARD CODE(S)	CONTAINER TYPE, NO. & SIZE		
		COMPONENT	CONCENTRATION (% OR MG/KG)			NO.	SIZE	TYPE
160507* 160508* 160509	10.000	as list	as list	Mixed	H3-A, H8	4	1m	Pallet

UN Identification Number — Packing Group — UN Class(es)

Proper Shipping Name: LIST — AS LIST — AS LIST

Special Handling Requirements: AS LIST

C CARRIER'S CERTIFICATE (If more than one carrier is used, please attach schedule for subsequent carriers)

If a schedule of carriers is attached, tick here ☐

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct, and I have been advised of any specific handling requirements.

1. Carrier Name: VEOLIA — On behalf of (Company Name, Address, Postcode, Telephone, Email and Facsimile): AS PER A4

2. Carrier Registration No./reason for exemption: GTL 361469-CB

3. Vehicle registration No. (if mode of transport, if not road): NX51 GXD ☎ Fax: Email:

Signature: Date: 12-5-06 at 10.20 Hrs.

D CONSIGNOR'S CERTIFICATE

I certify that the information in A, B and C above is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

Name DR JOHN SHEARS — On behalf of (Company Name, Address, Postcode, Telephone, Email and Facsimile): BRITISH ANTARCTIC SURVEY

☎ Fax: Email:

Signature: J. Shears Date: at Hrs.

BRITISH ANTARCTIC SURVEY, COMMERCIAL DOCKS, PORTLAND HARBOUR, PORTLAND, DORSET, AA0 0AA (01223)221226

E CONSIGNEE'S CERTIFICATE (Where more than one waste type is collected all of the information below must be completed for each EWC)

EWC CODE RECEIVED	QUANTITY (KG)	ACCEPTED/REJECTED	3. DETAILS OF REJECTED WASTE	WASTE MANAGEMENT OPERATION (R or D CODE)
160507* 160508* 160509	4000	ACCEPTED		D15

1. I received the waste at the address given in A4 on: MONDAY at 10.00 Hrs. 2. Vehicle Registration No. NX51 GXD

I certify that waste management licence/authorisation/exemption No. EAWML 75018 Authorises the management of the waste described in B at the address given in A4

Name: S. RYALL — On behalf of (Company Name, Address, Postcode, Telephone, Email and Facsimile): VEOLIA AS A4.

Signature: S. Ryall. Date: 15/5/06.

☎ 01234 768526 Fax: Email:

VES063 - 03/06

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