Biological Safety Series

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How to Transport Biological Samples, Cultures and Other Scientific/Research-Related Items

Health and Safety Division
HSD057B (rev 1)

UNIVERSITY OF CAMBRIDGE

CONTENTS

INTRODUCTION

This guidance should be issued to all persons in the University involved in the transport of biological materials.

- The transport of biological materials is subject to stringent requirements based on national and international legislation.
- The guidance covers the requirements for the transport of biological materials by road and air both within the UK and abroad.
- Usually it will be possible to determine in advance how a package is going to be transported but senders should bear in mind there is the increasing likelihood that packages sent by post or courier within the UK may be put on an internal flight and it is important to ensure the requirements for such journeys are complied with.
- All persons undertaking any role in the transport chain should be properly trained to carry out their responsibilities to the required standards.
- Sometimes it can be more cost-effective to use a specialist dangerous goods courier than to become involved in the complexities of the regulations.
- The University retains the services of a Dangerous Goods Safety Adviser (DGSA). All requests for advice are filtered via the Health and Safety Office.

1. CLASSIFICATION

1.1 First classify the items to be transported. If the goods meet the criteria for dangerous goods they have to be assigned a UN number and proper shipping name by following procedures set out under the UN hazard class specification.

(The UN numbers and proper shipping names are standardised across the world and recognised internationally as a detailed description of the goods: see below).

1.2 **Infectious substances**

As can be seen in the following sections, the definitions and classifications of biological materials for transport purposes are quite complicated. However, it is important to get the classification correct as this determines how the goods should be packaged and labelled and other transport requirements. It is not acceptable to just be overly cautious and classify more stringently than is necessary since it is an offence to consign dangerous goods incorrectly classified.

1.2.1 Infectious substances are assigned to one of the following UN numbers with the corresponding proper shipping names:

UN 2814 INFECTIOUS SUBSTANCE, AFFECTING HUMANS

UN 2900 INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only

UN 3373 BIOLOGICAL SUBSTANCES, CATEGORY B

UN 3291 CLINICAL WASTE, UNSPECIFIED, N.O.S., (BIO) MEDICAL WASTE, N.O.S. or REGULATED MEDICAL WASTE.

1.2.2 The UN description divides infectious substances into either Category A or Category B and this forms the basis for determining which of the above UN numbers should be assigned as follows:

Category A - an infectious substance which is carried in a form that, when exposure to it occurs, is capable of causing permanent disability, life-threatening or fatal disease to humans or animals.

Category B - an infectious substance which does not meet the criteria for inclusion in Category A.

Infectious substances in Category B are assigned to UN 3373 **except** cultures (see below) which are to be assigned to UN 2814 or UN 2900 as appropriate.

(An exposure is when an infectious substance is released outside of the protective packaging, resulting in physical contact with humans or animals).

1.2.3 In relation to the different types of biological materials:

1.2.3.1 Cultures of micro-organisms that are infectious for humans and/or animals must always be classified for transport as Category A.

1.2.3.2 Cultures of micro-organisms that are not infectious for humans or animals are not subject to control under the various transport regulations. However, when transported they must always be packaged in such a way that they are unlikely to leak in transit.

1.2.3.3 Human/animal tissue. Samples of materials such as blood, tissue, excreta, secreta etc collected from humans or animals are considered, as a minimum, Category B infectious substances.

1.2.3.4 Blood samples. University researchers may sometimes undertake studies which involve taking samples from volunteers where there is a relatively high incidence of hepatitis B or HIV within the general population of the area. Both these pathogens appear on the indicative list for Category A infectious substances but the entry refers to cultures only. Therefore, such samples, and even samples from individuals known to be infected with these agents, can be assigned to Category B (providing the pathogens have not been amplified or propagated and samples do not meet the criteria for inclusion in Category A for any other reason). But note below:

(a) Blood or blood components which have been collected for the purposes of transfusion or for the preparation of blood products to be used for transfusion or transplantation and any tissue or organs intended for use in transplantation (all in humans) are not subject to control under the various transport regulations.

(b) Important note for air transport: some operators (airlines) apply additional restrictions. For example AF-04 (Air France) and LH-12 (Lufthansa) will carry blood and tissue samples only if they are packaged and labelled under UN 2814 or UN 2900.

1.2.3.5 Categorisation of micro-organisms into either Category A or Category B for transport purposes is not directly related to the hazard group classifications assigned under the COSHH Regulations. Whilst all hazard group 4 pathogens meet the criteria for inclusion in Category A only some of those in hazard group 3 do. It should also be noted that two hazard group 2 pathogens, **Clostridium botulinum** and **poliovirus**, are included on the indicative list and there may be others that meet the criteria

1.3 Infectious GMs

1.3.1 GMMs which meet the definition of infectious substances above must be assigned to either UN 2814 or UN 2900 as appropriate. These would be genetically-modified micro-organisms assessed as requiring containment level 2 or above (based on the risk assessment made under the GM regulations) because they are harmful, or potentially harmful, to humans and/or animals.

1.3.2 GMMs that **do not** meet the definition of an infectious substance, **but** are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction are classified in Class 9 - Miscellaneous Dangerous Goods under UN 3245 GENETICALLY-MODIFIED MICRO-ORGANISMS.

1.3.3 These would be GMMs which can be handled at containment level 1 but are vectors and can transfer genetic material to other organisms. Note this is in relation only to micro-organisms and does not cover, for example, naked nucleic acid, plasmids or liposome gene delivery systems, none of which are controlled under the transport regulations. Vectors which require containment level 2 or above for safe handling in the laboratory must be classified as infectious substances as described in the previous paragraph.

1.4 Non-infectious GMs

1.4.1 GMMs which do not meet the definition of an infectious substance and which are not vectors as described above are not subject to the provisions of the transport regulations. These would be GMMs which can be handled at containment level 1 and present no significant risks to human or animal health and safety or the environment.

1.4.2 Some GMMs and GMOs are authorised for use in certain countries by the competent authority for that country. Where they have been so authorised, eg have received a consent for deliberate release into the environment, they are not subject to controls under the transport regulations providing that for any journey, authorisations apply in the country of origin, transit and destination.

1.5 Infected live animals

1.5.1 Live vertebrate or invertebrate animals must not be used to consign infectious substances or genetically-modified micro-organisms unless such substances cannot be consigned by any other means. In such cases, transport must be under terms and conditions approved by the relevant competent authority (infected live animals must not be transported by air unless specifically exempted).

1.6 Refrigerated or frozen materials

1.6.1 On dry ice

There is often a requirement to transport biological materials at low temperatures either on wet ice or dry ice.

Dry ice is listed in the Dangerous Goods List and is classified in Class 9 - Miscellaneous Dangerous Goods under UN 1845 CARBON DIOXIDE, SOLID.

For transport by road, dry ice is not subject to the provisions of the transport regulations (but see section 2 below). In contrast, when dry ice is transported by air various requirements must be met.

1.6.2 In liquid Nitrogen

Liquid nitrogen is subject to controls under the transport regulations and wherever possible its use should be avoided for refrigerating infectious substances during transport.

Very specialised UN type-approved packing is required to transport infectious substances in liquid nitrogen. (Departments must consign infectious substances, including diagnostic or clinical specimens, in liquid nitrogen only if there is no suitable alternative means).

2. PACKAGING

2.1 **Changes**

2.1.1 Changes for infectious substances consigned under UN 2814 or UN 2900:

(a) It is no longer necessary to show on the package the technical name as part of the proper shipping name.

(b) For air transport, the limit of 1 litre per primary receptacle for infectious substances consigned under UN 2814 or UN 2900 on cargo aircraft has been removed from Special Provision A81.

2.1.2 Changes to Packing Instruction 650 for diagnostic or clinical specimens:

(a) There are revised labelling requirements for diagnostic and clinical specimens – a diamond mark inside which is UN3373 with the words BIOLOGICAL SUBSTANCE, CATEGORY B marked adjacent.

(b) The outer packaging must be rigid.

(c) For air transport, the quantity limits have been revised. These now permit for liquids up to 1L per primary receptacle, with a total of 4L per package. For solids the package limit is 4Kg, and the primary receptacle may contain up to 4Kg.

2.1.3 Both road and air transport regulations include sections covering the security responsibilities of persons involved in the transport of dangerous goods.

2.2 Apart from restrictions on the quantity of materials in packages for air transport, the packing requirements are essentially identical whether the goods are transported by road or by air. However, the road (ADR) and air (IATA) transport regulations use different numbers for the Packing Instructions that in some cases are unfortunately similar – for example ADR Packing Instruction 620 is analogous to IATA Packing Instructions 602. For the sake of clarity the applicable Packing Instructions are referenced below.

2.3 In various sections the term *overpack* is used. An *overpack* is an enclosure used by a single shipper to contain one or more packages and to form one handling unit for convenience of handling and stowage.

2.4 Each package containing dangerous goods packages within an *overpack* must be properly packed, marked and labelled etc in accordance with the regulations and the *overpack* labelled (see Section 3). For cooling purposes, an *overpack* may be used to contain dry ice.

2.5 For infectious substances the packaging follows what is known as the triple layer system. The materials are placed in a leakproof primary receptacle which is wrapped in sufficient absorbent material to absorb the entire contents. This is then sealed in a leakproof secondary packaging which is placed in a further suitable packaging known as the outer.

2.6 In relation to the different types of biological materials:

2.6.1 Category A infectious substances **assigned to either UN 2814 or UN 2900 must be packed in accordance with:**

for road transport - ADR Packing Instruction 620
for air transport - IATA Packing Instruction 602

Packing procedures that meet the packing requirements of both the above.

For transport by road there are no *limits on the quantity of materials* contained within either the primary receptacle(s) or the total package. This is in contrast to transport by air where other than for body parts, organs or whole bodies:

(a) On passenger aircraft there is a 50ml/50g limit per package, and

(b) On cargo aircraft there is a 4L/4Kg limit per package.

(c) In both the above case there is no limit per primary receptacle.

2.6.2 **Category B infectious substances** assigned to UN 3373 must be packed in accordance with:

for road transport - ADR Packing Instruction 650
for air transport - IATA Packing Instruction 650

Packaging for Category B infectious substances is not required to be UN-type approved providing it is suitable for its purpose and capable of passing a 1.2 metre drop test.

For transport by road there are no limits on the quantity of materials contained within either the primary receptacle(s) or the total package. This is in contrast to transport by air where other than for body parts, organs or whole bodies:

On both passenger and cargo aircraft there is a 4L/4Kg limit per package, with a 1L limit per primary receptacle for liquids whereas for solids the primary receptacle must not exceed the outer packaging mass limit of 4Kg.

2.7 **Genetically-modified micro-organisms (GMMs)** assigned to UN 3245 must be packed in accordance with:

for road transport - ADR Packing Instruction 904
for air transport - IATA Packing Instruction 913

2.7.1 For transport by road there are no limits on the quantity of materials contained within either the primary receptacle(s) or the total package. This is in contrast to transport by air where the maximum quantity in a primary receptacle must not exceed 100 ml or 100 g although there is no total limit per package.

2.7.2 This applies **only** to GMMs assigned to UN 3245. GMMs assigned to UN 2814 or UN 2900 must be packaged and labelled as Category A infectious substances.

2.8 **Non-hazardous biological materials**

2.8.1 Biological materials that are not classified as dangerous goods should still be packaged in such a way that they do not leak during transport.

2.9 **Refrigerated or frozen materials**

2.9.1 Biological materials are frequently transported at low temperatures either on wet ice or dry ice and particular care must be taken to ensure the integrity of the packaging used is not compromised when these melt or dissipate.

2.9.2 Dry ice is assigned to UN 1845 and for air transport must be packed in accordance with IATA Packing Instruction 904 (there is no applicable Packing Instruction for road transport). The requirements of PI 904 are included within the procedures for dry ice detailed in various sections in this guidance.

2.9.3 Dry ice must be placed only in packaging designed and constructed to permit the release of carbon dioxide gas and to prevent the build up of pressure that could rupture the packaging. If dry ice is used to cool the materials it **must** be placed around the secondary packaging(s), and the outer packaging (including any overpack) must permit the release of carbon dioxide gas. Dry ice **must never** be placed in either the primary or secondary receptacle as gas will build up and eventually these will explode with potential to cause very serious damage.

2.9.4 If wet ice is used it should be placed around the secondary packaging in the form of sealed cold packs or similar rather than being loose, and the outer packaging should be leakproof.

2.9.5 Interior supports should be provided to secure the secondary packaging(s) in an upright position after the wet ice has melted or dry ice has dissipated. The primary receptacle and the secondary packaging need to be able to maintain their integrity at the temperature of the refrigerant used.

2.9.6 Insulated products for use with wet ice or dry ice, known as overpacks or thermal control units, are available commercially. Where these are used for packages containing Category A infectious substances, particular care must be taken to ensure that the final packaging combination meets UN performance requirements (ie the UN type-approved packagings are used in accordance with the manufacturers instructions). Alternatively, UN type-approved products specifically designed for use with wet ice or dry ice are available.

2.9.7 There are particularly stringent requirements that must be met for transport of infectious substances in liquid nitrogen either by road or by air. Departments should consign infectious substances, including diagnostic or clinical specimens, in liquid nitrogen only if there is no suitable alternative means.

2.9.8 *For air transport:* other dangerous goods must not be packed in the same packaging as Class 6.2 Infectious Substances unless they are necessary for maintaining the viability, stabilising or preventing degradation or neutralising the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Classes 3, 8 or 9 may be packed in each primary receptacle containing infectious substances.

3. LABELLING

3.1 Packages should be clearly labelled with the delivery address and senders details. For all items assigned to UN 2814 or UN 2900 emergency contact details **must** be shown on the outer package, this should include a named person, at both where the package is being sent from and where it is going to, and a telephone number. However, in order to facilitate any problems during transport being readily resolved, it is recommended that emergency contact details be shown on all packages containing biological materials.

3.2 Labels must be durable and legible and clearly visible on the outside of the packaging. The package must be of such a size that there is adequate space to fix all the required markings and labels. The warning/information label must be located on the same surface of the package as the consignor's or consignee's address. If an overpack is used, it should be marked with the word "Overpack" and unless the labels on the packages it contains are clearly visible they must be reproduced on the outside of the overpack.

3.3 The following labels must be used as applicable to the contents (refer to all sections to ensure all necessary labels are used):

3.3.1 **Category A infectious substances** assigned to either UN 2814 or UN 2900

label as either	UN 2814	INFECTIOUS SUBSTANCE, AFFECTING HUMANS
or	UN 2900	INFECTIOUS SUBSTANCE, AFFECTING ANIMALS only

And nearby affixed to the same surface, the hazard warning label for Class 6.2 - Infectious substances exactly as shown below:

Emergency contact details (name and telephone number) **must** be shown on outer packages containing Category A infectious substances.

It is not necessary to show the technical name, that is the recognised biological (scientific/technical) name of the micro-organism, on the package, but the proper shipping name should be supplemented with the technical name in the accompanying transport documentation (see Section 4).

3.3.2 **Category B infectious substances** assigned to UN 3373

Mark with the proper shipping name in letters at least 6 mm high:

BIOLOGICAL SUBSTANCE, CATEGORY B

And adjacent display the following mark exactly as below. The background of the mark has to be a contrasting colour to the surface of the package.

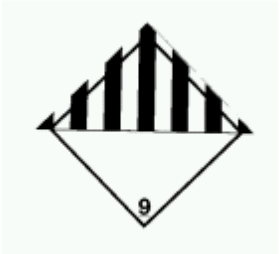
For Category B infectious substances, the above diamond does **not** contain either the biohazard sign or the number 6.

3.3.3 **Genetically-modified micro-organisms** assigned to UN 3245

Mark with the UN number and proper shipping name

UN 3245 GENETICALLY-MODIFIED MICRO-ORGANISMS

And nearby affixed to the same surface, the hazard warning label for Class 9 - Miscellaneous dangerous goods exactly as shown below.



This applies **only** to GMMs assigned to UN 3245. GMMs assigned to UN 2814 or UN 2900 must be packaged and labelled as Category A infectious substances.

3.3.4 **Non-hazardous biological materials**

Since they are not subject to control under the transport regulations there are no labelling requirements for biological materials that are not classified as dangerous goods.

3.3.5 **Refrigerated or frozen materials**

If an overpack is used, all required labels described above must also be clearly visible or repeated on the overpack.

3.3.5.1 **Where the package contains dry ice and is transported by road:**

Mark with the words: DRY ICE

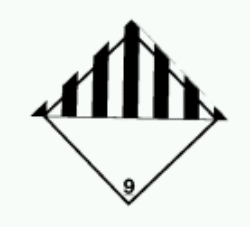
The UN number and associated hazard label are not required.

3.3.5.2 **Where the package contains dry ice and is transported by air:**

Mark with the UN number and proper shipping name and the net weight of dry ice

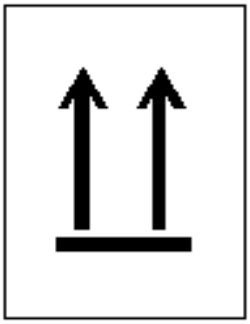
UN 1845 DRY ICE ## Kg

And nearby affixed to the same surface, the hazard warning label for Class 9 - Miscellaneous dangerous goods as shown below.



3.3.6 **Packages containing liquids**

Packages containing liquids must display "Package Orientation" labels. This must be at least 74 x 105 mm in size and show two black or red arrows on a white or suitable contrasting background.



The labels must be affixed or pre-printed on at least two opposite sides to show the proper orientation for the primary(s) to be in the upright position.

3.3.7 **Packages suitable for cargo aircraft only**

The Cargo Aircraft Only label must be used if the package is permitted only on cargo aircraft – this would be where it contains more than the quantity allowed on a passenger aircraft.

The Cargo Aircraft Only label must be affixed on the same surface of the package as, and near, the hazard label.

4. PAPERWORK/DOCUMENTATION

4.1 Any carriage of goods subject to controls under the transport regulations must be accompanied by documentation specified in those regulations. The information required must be clearly legible and for air transport **must exactly meet the specified format**. The following includes requirements for paperwork included within the package and for paperwork accompanying the package for the carrier etc.

4.2 When transporting any biological materials, paperwork must be included within the package between the secondary and the outer (attached to the secondary), giving: **the names and addresses of both the consignor (sender) and consignee (receiver), including emergency contact details (name and telephone number) at both ends**

4.3 For dangerous goods, a description of the goods in the following format/order

UN NUMBER and PROPER SHIPPING NAME

In addition, for infectious substances assigned to UN 2814 or UN 2900 the proper shipping name must be supplemented with the technical name (the recognised biological/scientific/technical name of the micro-organism). **When the infectious substances to be transported are unknown***,* but suspected of meeting the criteria for inclusion in Category A and assignment to UN 2814 or UN 2900, the words "suspected Category A infectious substance" in parentheses should be used as the technical name.

for UN 2814 and UN 2900, an itemised list of contents

4.4 **When using a courier** always give a full description of the goods to the company when initially arranging the shipment, including the relevant UN number(s) and proper shipping name(s), in order the courier is fully aware they will be transporting dangerous goods and ensures the necessary paperwork is completed.

4.5 For transport by road of packages containing dangerous goods other than those assigned to UN 3373, the carrier (company transporting the goods) should request that a dangerous goods declaration form be completed. **Typically the carrier will provide a copy of the form for completion.**

4.6 For transport by air of packages containing dangerous goods it is necessary to complete an Air Waybill and, in most cases, a Shipper's Declaration for Dangerous Goods.

4.7 Before sending any biological materials abroad, the person sending the goods (the consignor/shipper) should contact the recipient to **check that the substance may be legally imported.**

4.8 The person **receiving** the materials is generally regarded as the **importer** and the one responsible for obtaining, where necessary, all appropriate permits or licences. Importation of materials into the United States is particularly tightly regulated and there are restrictions even on some items that may be transported as non-dangerous goods. In contrast, very few items require any sort of import permit, licence or notification to be made when importing into the UK – these are limited to certain animal pathogens or materials that may contain them, all hazard group 4 and a few hazard group 3 pathogens, and items covered by the anti-terrorism legislation.

5. TRANSPORT

5.1 Between university sites

For transport by road, the transport regulations apply if the goods are transported on the public highway **by any means**. However, they do not apply to carriage between one part of University premises and another part situated in the **immediate vicinity** even if a public road separates them. However, even if the regulations do not apply because the journey is as described above, the materials must still be packed in such a way to ensure they do not leak in transit and be appropriately labelled with emergency contact details.

5.2 Taking the samples in person

5.2.1 Researchers often wish to carry biological materials on their person or in their bags. **However, this is strictly forbidden when travelling by air**. The air transport regulations specify that **dangerous goods must not be carried by passengers as/or in checked baggage, carry-on baggage or on their person.**

5.2.2 Dangerous goods must always be transported as separate packages in the hold and must always be declared. (The operator/airline is required to report to the appropriate State authority when undeclared or misdeclared dangerous goods are discovered. This is a serious offence and would be dealt with accordingly by the authorities).

5.2.3 If individuals wish to carry dangerous goods with them on a journey (as a separate package to go in the hold) they **must** make advance arrangements with the airline and complete an Air Waybill and, where necessary, a Shipper's Declaration for Dangerous Goods. Individual airlines have different requirements and may require early check in.

5.2.4 **Where dry ice is used** in packages containing other dangerous goods (eg infectious) the requirements in the previous paragraph must be met.

5.2.5 However, where the dry ice is used to pack perishables which themselves are NOT classified as dangerous goods, then dry ice is permitted on aircraft as checked or carry-on baggage providing the quantity of dry ice does not exceed 2 Kg and the package permits the release of carbon dioxide gas. Packages must be properly labelled as detailed in section 3 above. Passengers are limited to a maximum of 2 Kg in carry-on and checked baggage combined.

5.2.6 In all cases the operator (airline) must be informed you wish to carry dry ice (specific approval is required to carry it in checked baggage) to ensure ventilation safety procedures are followed. In some cases the operator will apply their own restrictions on carriage of dry ice.

5.2.7 For air transport, some states (countries) and operators (airlines) place additional restrictions or constraints on certain shipments – for example some countries prohibit entry of infectious substances without prior approval by the authorities and some airlines will not carry infectious substances. These restrictions are included within the IATA regulations as state and operator variations. **Many airlines require advance arrangements to be made for the transport of dangerous goods.**

5.2.8 Unless a specialist dangerous goods courier is used, senders of infectious substances are advised **always to contact the operator/airline** to check on their specific requirements for a particular shipment and to make any necessary arrangements for the consignment.

5.3 **Postal Services**

5.3.1 International Mail - Infectious substances, including diagnostic or clinical specimens, are not permitted either to or from the UK.

5.3.2 Domestic Mail - Most infectious substances may be posted in the domestic mail subject to following the special arrangements described below and the rest of this guidance.

5.3.3 **Royal Mail and Parcelforce National Postal Services**

(a) Certain types of dangerous goods cannot be sent by post at all (prohibited) whereas others are accepted only on a restricted basis (restricted).

(b) Most hazardous biological materials may be posted in the domestic mail if packed and labelled correctly under the restrictions imposed by the postal services. Only materials containing hazard group 4 and certain other specified dangerous pathogens (rabies virus, simian herpes B virus, Venezuelan equine encephalitis virus, tick-borne encephalitis viruses in hazard group 3, monkeypox virus and Mopeia virus) are prohibited in the domestic mail. Dry ice is also prohibited.

(c) Only recognised laboratories or institutions or certain professional persons are permitted to send hazardous biological materials in the post. Members of the public may only post such materials at the specific request of such a laboratory or person

(d) All biological materials sent by the domestic postal services must be classified, packaged and labelled in accordance with the requirements set out in the relevant sections above. The amount of infectious substances (which would include any items assigned to UN 2814, UN 2900, or UN 3373) that can be sent by post is restricted to a **maximum quantity of 50 g or 50 ml per package**.

(e) The Royal Mail has produced Safebox™ a purpose designed packaging for sending diagnostic or clinical specimens in the postal system with the advantage the package can be posted in a pillar-box. It comes as a complete ready to use kit at a unit cost of around £2.20 including pre-paid postage. This packaging is suitable for sending Category B substances (those assigned to UN 3373) and must not be used for Category A infectious substances. Safebox™ is only available through the Royal Mail and can be obtained via the Safebox™ Orderline on 08450 762 000. Further details are available on the Royal mail website (go to http://www.royalmail.com and search for Safebox).

5.3.4 **Sending Living Creatures by Post**

In general, living creatures cannot be sent by post. However, the following are accepted under certain conditions:

(a) Bees, leeches, silkworms, mealworms, lugworms, earthworms, ragworms, caterpillars, pupae and chrysalids, maggots, fish fry and eggs, certain parasites and destroyers of noxious pests.

(b) Other insects can also be sent from or to officially recognised institutions such as schools, colleges, research institutions and biological suppliers.

(c) **Living creatures may be sent only by prior arrangement with Royal Mail** and on production of a sample of the packaging intended to be used. Consult the Royal Mail Customer Service Centre (telephone 08457 740740) for further information.

(d) Living creatures must be sent in boxes which prevent all risk of injury to Royal Mail staff and damage to their items. They must also be packaged so as not to cause death or distress to the creatures themselves.

(e) They must always be taken to a Post Office and sent by first class post and should be clearly labelled "URGENT - LIVING CREATURES" or "URGENT - BIOLOGICAL SPECIMENS" as appropriate. A full return address must be shown on the outside of the box.

(f) Wherever possible departments should avoid sending living creatures by post.

5.3.5 **Royal Mail and Parcelforce International Postal Service**

(a) Any biological materials which are classified as dangerous for carriage (which would include any items assigned to UN 2814, UN 2900, UN 3373 or UN 3245) **cannot** be sent in the international postal services.

(b) Prospective senders of packages containing non-dangerous goods must be **authorised users** of the service. Authorisation involves submitting specimen packaging materials for approval and nomination of a Crown Office for posting. After approval the applicant is issued with an authorisation card and necessary documentation.

6. SECURITY

6.1 There are security provisions both in ADR and the IATA regulations requiring measures or precautions to be taken to minimise theft or misuse of dangerous goods at all points of the transport chain. University personnel must consider security aspects and the following should be regarded as minimum requirements.

6.2 **Packages containing infectious substances** including diagnostic or clinical specimens, must be handed over only to persons and companies (individuals, couriers, airlines etc) that have been appropriately identified. Packages awaiting collection, either external for uplift or internal following delivery, must be properly secured and not accessible to the general public.

6.3 **Infectious substances of Category A** (ie those assigned to UN 2814 or UN 2900) are listed in the regulations as "High consequence dangerous goods". High consequence dangerous goods are those which have the potential for misuse in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction. The need for additional security measures should be considered and implemented as appropriate for such goods.

6.4 Departments should contact the School Safety Officers (Biological Sciences (3)32797, Clinical Medicine (7)67124 or the Health and Safety Office on (3)39535 for further advice in the event of any queries, or in relation to other activities involving the transport of biological materials not covered in this guidance.

7. USEFUL INFORMATION

7.1 Dangerous Goods

Items or articles that are being transported that have certain hazardous properties are defined as "dangerous goods" under the international agreements. The classes of dangerous goods are:

Class 1	Explosive substances and articles
Class 2	Gases
Class 3	Flammable liquids
Class 4.1	Flammable solids, self-reactive substances and solid desensitized explosives
Class 4.2	Substances liable to spontaneous combustion
Class 4.3	Substances, which, in contact with water, emit flammable gases
Class 5.1	Oxidizing substances
Class 5.2	Organic peroxides
Class 6.1	Toxic substances
Class 6.2	Infectious substances
Class 7	Radioactive material
Class 8	Corrosive substances
Class 9	Miscellaneous dangerous substances and articles

7.2 International Agreements

The international agreements governing the transport of dangerous goods are:

i) Transport by road and rail – ADR and RID

ii) Transport by air – ICAO (and IATA)

iii) Transport by sea – IMDG

APPENDIX 1

References

Department of Transport – Carriage of Dangerous Goods
http://www.dft.gov.uk/pgr/freight/dgt1/

Carriage of Dangerous Goods and the Use of Transportable Pressure Equipment Regulations 2007
http://www.opsi.gov.uk/si/si2007/uksi_20071573_en_1

Carriage of Dangerous Goods Manual
http://www.hse.gov.uk/cdg/manual/index.htm

International Air Transport Association (IATA) - transporting infectious substances:

- Guidance notes (including exploded diagrams of packaging requirements)
- Classification of infectious substances
- Packaging Instruction 650

http://www.iata.org/whatwedo/cargo/dangerous_goods/Pages/infectious_substances.aspx

Signs and Labels
www.signsandlabels.co.uk

APPENDIX 2

Some Companies that can be used for Transport

The following specialise in the transport of dangerous goods including infectious substances. No endorsement or recommendation of their services is implied. There are other companies.

Dangerous Goods International (UK) Limited (DGI)
Unit C8
Heathrow Corporate Park
Green Lane
Hounslow
TW4 6JG
United Kingdom
Tel: 0208 814 0404
Fax: 0208 814 1881
Email: tom.heyman@dgiglobal.com
Website: http://www.dgiglobal.com

Davies International
Units 19-21
Wedgewood Road
Bicester
Oxfordshire OX26 4UL
Tel: 01869 250350
Email: sales@daviesinternational.uk.com
Website: http://www.daviesinternational.uk.com/

World Courier (UK) Limited
1/8 Spitfire House
Turnhouse road
Edinburgh EH12 0AL
Tel: 0131 3178700 *or* 0800 289839
Email: sales@worldcourier.co.uk
Website: http://worldcourier.com/uk/index.html

Biocair UK (Biocair International Ltd)
The Business Centre
Church End
Cherry Hinton
Cambridge
CB1 3LB
United Kingdom
Tel: 01223 245223
Fax: 01223 245211
Email: sales@biocair.com

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