Code of Practice for the Transport of Potentially Dangerous Goods

Contents

1. Introduction

This Code of Practice contains instructions, advice and information for any employee or student of the University that may, in connection with their work, be required to send or receive items or substances by road, rail or air.

Certain items may be considered Dangerous Goods and adherence to the information contained in this Code will ensure that the legal requirements of the relative modes of transport are met.

This Code deals with the categories of Dangerous Goods most commonly consigned by University personnel.

Items such as plants, plant materials and live animals are covered by specific import and export licensing controls operated by Department of Environment, Food and Rural Affairs (DEFRA). Section 9 of this code deals with these items.

1.1 General requirements

Where a person wishes to send or receive substances they must first inform their School or Departmental Safety Officer who will ensure the necessary arrangements are made in accordance with this Code.

Where the **University is the recipient** of dangerous goods arrangements should be made to ensure that the consignment is received at a suitable location and time so as to ensure adequate control and security of the material.

All persons undertaking any role in the transport chain should be properly trained to carry out their responsibilities to the required standards. They must appreciate the risks involved and have a detailed understanding of the relevant regulations.

1.2 Legislation

The strictest shipping requirements are for transport by air. Due to the location of the university close to East Midlands Airport and the increasing use of transport by air for shipping of goods by carrier, any items shipped by carrier should be packaged to International Air Transport Association Dangerous Goods Regulations (IATA) requirements unless you have confirmed that it will only be transported by road.

Transport by road and rail is subject to the requirements of the *Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Equipment Regulations 2004 [as amended by the amendment regulations of 2005].* These regulations implement various European Council Directives and agreements on the international carriage of dangerous goods by road and rail (referred to as ADR and RID respectively).

Transport by air. The Technical Instructions for the Safe Transport of Dangerous Goods by Air and the International Air Transport Association Dangerous Goods Regulations are recognised as the legal requirements for transport by air.

Transport by sea is regulated under the International Maritime Dangerous Goods Code. This mode is seldom used and is not considered further in this code.

2. Dangerous Goods

Dangerous Goods are defined as *'any goods, including articles and substances which may pose a danger to the health and safety of people, or damage to property or the environment during carriage, except where they have been diluted to such an extent that they no longer have the hazardous properties of those goods'*.

The main requirements placed on the person sending goods [consignor] are to:

- identify the hazards of the goods they intend to transport - this is called classification,
- package the goods suitably and safely,
- provide information about the hazards of the goods they are carrying – i.e. to mark and label them correctly and
- provide information to the vehicle operator/carrier.

Similarly, anyone supplying dangerous goods has to provide information to the users of the goods to enable them to take any precautions necessary during usage. These requirements are known as the 'supply requirements', and are covered by regulations called the *Chemicals (Hazard Information and Packaging for Supply) Regulations 1994, amended 1996 (CHIP1996).*

The Table shown in **Appendix 1** summarises the main hazards and shows the UN classification code and symbol.

Before transporting goods from the University consult this table. If any of the definitions apply to the goods to be transported, the substance could be considered dangerous for carriage.

3. Responsibilities and Organisation

The efficient transport and transfer of dangerous goods requires good co-ordination between the sender, the carrier and the receiver (receiving laboratory), to ensure that the material is transported safely and arrives on time and in good condition. Such co-ordination depends upon well-established communication and a partner relationship between the three parties. All have specific responsibilities to carry out in the transport effort.

Each School/Department wishing to consign dangerous goods must have at least one nominated competent person to oversee the correct designation, packaging, labelling and documentation requirements. A one-day course that must be re-taken every two years is required for infectious substances, GMO, de-minimis and exempt goods and dry ice. For other categories either a three day course covering the full scope is required or alternatively the courier company can provide a full consignment service at additional cost. The courier companies audit compliance as part of their contract approval/acceptance process. Refer to Appendix 3, 4 and 5 for more detail.

An external Dangerous Goods Safety Advisor has been appointed by the Safety Office for the purpose of advising on compliance and more complex shipments. The DGSA can be contacted via the Safety Office.

The sender must

1. Ensure that they or a designated person in the department / school is competent to ship the goods or use the services of a dangerous goods safety advisor.
2. Ensure the correct designation, packaging, labelling and documentation of all dangerous goods.
3. Make advance arrangements with the receiver of the dangerous goods including investigating the need for an import permit.
3 Make advance arrangements with the carrier to ensure:
   - that the shipment will be accepted for appropriate transport
   - that the shipment (direct transport if possible) is undertaken by the most direct routing, avoiding arrival at weekends;

4. Prepare necessary documentation including permits, dispatch and shipping documents;
5. Notify the receiver of transportation arrangements once these have been made, well in advance of expected arrival time.
6. Ensure the School or Departmental Safety Officer is informed and involved in the transport arrangements.

The carrier must

1. Provide the sender with the necessary shipping documents and instructions for their completion;
2. Assist the sender in arranging the most direct routing and then confirm the routing;
3. Maintain and archive the documentation for shipment and transport;
4. Monitor required holding conditions of the shipment while in transit;
5. Notify the sender of any anticipated (or actual) delays in transit.

The receiver must

1. Obtain the necessary authorisation(s) from national authorities for the importation of the material;
2. Provide the sender with the required import permit(s), letter(s) of authorisation, or other document(s) required by the national authorities;
3. Arrange for the most timely and efficient collection on arrival;
4. Immediately acknowledge receipt to the sender.
5. Where the University is the recipient, arrangements should have made to ensure that the consignment is received at a suitable location and time so as to ensure adequate control and security of the material.

Shipments should not be dispatched until:

- advance arrangements have been made between the sender, carrier and receiver,
- the sender has confirmed with the national authorities that the material may be legally exported,
- the receiver has confirmed with the national authorities that the material may be legally imported,
- The receiver has confirmed that there will be no delay incurred in the delivery of the package to its destination.

4. Chemicals and hazardous / toxic substances

There are a number of methods of shipping chemicals depending on the hazards and quantity of what you want to ship.

4.1 De-Minimus Quantities

Chemicals listed with the codes (IATA and ADR) E1, E2, E4 AND E5 can be sent in small quantities as de-minimus quantities.

Maximum Quantity per container	1g/1ml
Maximum Quantity per outer box	100g/100ml
Labelling requirements	None" Use the description Not Restricted as per IATA 2.6.10" on the box / waybill etc.
Packing requirements	Sufficient to withstand transport Must pass a drop test from 1.2m and contents not leak from the container Inner container must be leak proof

4.2 Excepted Quantities

Each substance has an excepted quantity value listed in IATA and ADR. This is the maximum quantity that can be shipped as an Excepted Quantity.

E0 codes have a zero value and are not permitted to be shipped as Excepted Quantities.

Maximum Quantity per container (will vary by code and must be checked before shipping)	Up to a maximum of 30g/30ml
Maximum Quantity per outer box (will vary by code and must be checked before shipping)	Up to a maximum of 300g/300ml
Labelling requirements	Excepted Quantity label with class number, consignor and consignee details.
Packing requirements	Must pass a drop test from 1.2m and contents not leak from the container Inner container must be leak proof Contents must not rattle when box is shaken.

4.3 Limited Quantities

Each substance has a limited quantities value listed in IATA and ADR. This listed the maximum quantity that can be shipped per container. A box must not contain more than 30kg combined.

If you wish to ship limited quantities you must seek the advice of a dangerous goods safety advisor or specialist courier.

4.4 Large Quantities of Chemicals

If you wish to ship large quantities of chemicals you must seek the advice of a dangerous goods safety advisor or specialist courier.

5 Biological substances

5.1 Introduction

The information in this section of the Code has been compiled with reference to the guidance documents entitled **'Transport of Infectious Substances'** published by:

Department for Transport, Civil Aviation Authority and the maritime Coastguard Agencyand ***the World Health Organisation***

5.2 Definitions

Infectious substances are defined as '*substances which are known or reasonably expected to contain pathogens which are defined as micro-organisms (including bacteria, viruses, rickettsiae, parasites, fungi), plasmids and other agents such as prions, which can cause disease in humans or animals'*.

A culture is defined as the result of a process by which pathogens are amplified or propagated in order to generate high concentrations, thereby increasing the risk of infection when exposure to them occurs. Cultures prepared for the intentional generation of pathogens may not be transported as diagnostic specimens.

Patient specimens are human or animal materials, collected directly from humans or animals, including, but not limited to, excreta, secreta, blood and its components, tissue and tissue fluid swabs and body parts being transported for purposes such as research, diagnosis, investigational activities, disease treatment and prevention.

5.3 Exemptions

- Non-pathogenic micro-organisms,
- Human or animal specimens for which there is minimal likelihood that pathogens are present providing the specimen is transported in a packaging that will prevent leakage and is marked with the words 'Exempt human specimen' or 'Exempt animal specimen' *****
- Waste or biological material that has been inactivated so that it no longer poses an infectious risk,
- Environmental samples (including food and water samples) which are
- not considered to pose a significant risk of infection,
- Dried blood on absorbent material or faecal occult blood,
- Blood/blood components for transfusion, tissues organs for transplant.

**** Note:*** It is the opinion of the UK authorities that this exemption can only apply to substances that are known not to contain pathogens [e.g. following testing or action to neutralise/inactivate any pathogen present] Expert medical advice in the UK is that it is not always possible to categorically state that no pathogens are present or those that are present do not pose a risk. Therefore it is strongly recommended that these are assigned to UN 3373 (see section 5.4.2 below) to avoid any inadvertent breach of the regulations.

5.4 Classification

Under the regulations infectious substances are further classified as either Category A or Category B

5.4.1 Category A includes the higher risk infectious micro-organisms, defined as;

'an infectious substance, which is transported in a form that, when exposure to it occurs, is capable of causing permanent disability, life threatening or fatal disease in otherwise healthy humans or animals'. An internationally agreed 'indicative' list has been published and is given in Appendix A of the IATA guidance.

Substances assigned to Category A must be consigned/shipped as either:

UN2814 Infectious substance affecting humans or

UN2900 Infectious substance affecting animals only

New or emerging pathogens which do not appear on the indicative list but which meet the criteria must be transported as Category A. Avian Influenza is one such pathogen.

5.4.2 Category B infectious substances are any that do not meet the criteria of category A and included any human or animal material including but not limited to excreta, blood and its components, tissue and tissue fluids transported for purposes such as research, diagnosis, investigational activities, disease treatment or prevention.

These are assigned to UN 3373 Biological Substance Category B

5.4.3 Genetically Modified Microorganisms

Infectious GMOs
GMMOs and GMOs that meet the definition of an infectious substance shall be assigned to UN2814, UN2900 or UN3373 as appropriate.

Non-infectious GMOs
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 assigned to UN 3245 GENETICALLY MODIFIED MICRO-ORGANISMS.

These are GMMs that can be handled at containment level 1 but which 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.

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.

5.4.4 Plants and Seeds

Wildtype plants and seeds are not subject to the transport regulations and can be transported as non-hazardous. Consideration needs to be given to licences that may be required, see section 9 and to any human or plant pathogens / infectious substances that may be contained within the sample / soil.

GM plants and seeds which are known or suspected to be dangerous to the environment or are capable of altering animals, plants or microbiological substances in a way not normally the result of natural reproduction must be transported in accordance with conditions specified by the competent authority, and are classified as Miscellaneous Dangerous Goods, under UN 3245 Genetically Modified Organisms. Some GM plants and seeds are authorised for use in certain countries by the competent authority for that country. Where they have been so authorised, e.g. 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.

5.4.5 Schedule 5 Pathogens and Toxins

Certain more hazardous or sensitive biological agents and toxins are listed within the Anti-terrorism, Crime and Security Act.

If one of the listed items, see link below for more detail is to be transported to or from the University, the Safety Office **must be informed** in advance of the shipment being arranged.

http://www.nottingham.ac.uk/safety/policies-and-guidance/bio-gm/bio-gm.aspx

5.5 Labelling and Packing

See **Appendix 3** for detailed information on shipping and packing of biological agents.

6 Refrigerants

6.1 Dry Ice (UN Class 9)

Dry Ice is the normal and preferred means of refrigeration.

- Dry ice should be placed **outside** the secondary receptacle. It must not be placed inside the primary or secondary receptacle because of the risk of explosion.
- The secondary receptacle must be secured within the outer packaging to prevent damage after the ice has dissipated.
- Packaging must permit release of gas to prevent pressure build up.
- The carrier must be aware that the package contains dry ice and that procedures are arranged to ensure adequate ventilation.

6.2 Dry shippers (UN3511)

A dry shipper utilises absorbed gas, usually liquid nitrogen to keep the contents cold for transport. The dry shipper takes the role of the packaging and requires a green cylinder label, contents and address details on the package.

7 Radioactive Substances

Transport and movement of radioactive materials is also regulated by the Radioactive Materials Road Transport Regulations 2002.
The designation of radioactive substances is complex and is done on a case by case basis. The School/Department Radiation Protection Supervisor must be informed. He/she must in turn inform the Safety Office before any arrangements are made to send or receive radioactive materials other than for the receipt of routine radiochemical orders. In particular a local log of consignments must be kept, and a copy of the label/consignment note must be sent to the Safety Office for the purposes of auditing and compiling records for transport of radioactive materials.
The Office for Nuclear Regulation oversees compliance with this legislation and may require records relating to consignments.

Further guidance is contained in Safety Office guidance: Guidance for the Transport of Radioactive Material by Road.

8 Modes of Carriage

8.1 Couriers

Use of a reputable company experienced in the transport of dangerous goods is the preferred means of transport as this will assist in ensuring that all regulatory requirements are met. It is also the most reliable way of ensuring that the goods reach their destination safely and within a reasonable time frame.

The University Procurement Department has an approved list of Courier companies that provide this service in accordance with the necessary regulatory requirements. Details can be found on the Procurement Department web site.

In order to ship the following classes of dangerous goods;

- Infectious Substances Category B – UN 3373
- Dry Ice UN Class 9
- Genetically Modified Microorganisms– UN3245
- Excepted Quantities
- De Minimus Quantities

The courier will require that:

- a work instruction is in place, see example in **Appendix 4**,
- there is a trained consignment approver with in the school, and
- your account is approved to ship, this may involve a simple audit from the courier.

See **Appendix 3** for detailed information on sending the above goods by carrier.

If you wish to ship Class A biological samples, limited quantity or large quantity chemicals the courier will require you to have completed the full three day transport course or to use specialist courier services that will also act as the Dangerous Goods Advisor for the shipment.

8.2 Use of Postal Service

The following table summarises what is permitted in the postal service.

Category	International mail	Domestic mail
A - UN2814/2900	No	No
B – UN3373	No	Yes*
Exempt human/animal specimens	Yes	Yes
GMMs UN3245	No	Yes
Dry Ice	No	No
Radioactive Materials	No	No

*Maximum volume 50ml or 50g

All biological materials sent in the domestic postal service must be classified, packaged and labelled in accordance with the requirements set out in the relevant sections of this code. Royal Mail will supply a purpose designed packaging system for Cat B substances in the domestic system. This is known as Safebox ™
They should go via the mailroom and not put in a normal post box.

Details and prices can be found at
http://www.royalmail.com/portal/rm/jump2?catId=400028&mediaId=600005

8.3 Air Passenger Transport

Infectious substances in Category A or B **are not** permitted for transport in carry-on or checked baggage and **must not** be carried on the person. They may only be transported as cargo in accordance with Dangerous Goods Regulations, in which case a Courier will be used.

8.4 Local Surface Transport

Examples include transport from a hospital to a research laboratory in the university or between laboratories on different campus.

This may involve the use of University or NHS transport vehicles, private cars, local courier services or even taxis. Whatever method is used the principle of safe transport by this means is the same as for air or international road transport.

UNDER NO CIRCUMSTANCES SHOULD CATEGOGY A BIOLOGICAL SUBSTANCES (UN2814 and UN2900) BE TRANSPORTED BY PRIVATE VEHICLE, PUBLIC TRANSPORT, OR TAXI.

- The sample should be packaged and labelling in accordance with its classification
- The transport box should be secured in the transport vehicle;
- Specimen data forms and identification data should accompany each transport box;
- A spill kit containing absorbent material, an appropriate disinfectant, leak-proof waste disposal container and heavy duty reusable gloves should be kept in the transport vehicle.

The Nottingham University Hospitals Trust provides a regular bus service every 10 minutes between City Hospital and Queens Medical Centre. Where it is not practicable to use a courier it is possible to transport small volumes of Cat B Biological Specimens providing it is safely packaged and accompanied by a suitably trained person.

Use of private vehicles should only be considered in exceptional circumstances where it is not practicable to use a courier or NUHT/ University transport systems and the amount involved does not exceed 20Kg. Where an individual chooses to use their own vehicle they must ensure their own insurance is extended to include Business use if driving on University business. The University does not reimburse this cost.

The driver and person packing the goods must have received appropriate training so that s/he is aware of the nature of the hazard and how to deal with any emergency. The vehicle must have a 2kg fire extinguisher. The vehicle must be suitably supervised or securely parked when the load is on board. The goods should be packed and labelling in accordance with the UN classification.

Suitable information and contact details should be affixed to the package in event of an emergency.

If Dry Ice dry ice is to be transported the same principles outlined in section 6 must be observed. The driver must be made aware of the presence of dry ice and ensure that the vehicle is well ventilated.

The most significant risks incurred when transporting dry ice are the creation of an unsafe atmosphere due to sublimation of the product.

When transporting dry ice you should;

- Ensure the driver must be made aware of the presence of dry ice and ensure that the vehicle is well ventilated.
- AVOID transporting dry ice in the cab of a truck or the passenger compartment of a car, if this is not possible, the load should be well insulated and adequate ventilation must be maintained. Preferably transport dry ice in vehicles where the driver's cab is isolated from the load compartment, consideration should be given to the use of -70 freezer packs as an alternative.
- ALWAYS secure the load compartment doors in the open position before entering. For large "walk-in" load compartments, the doors should be capable of being opened from the inside. ALWAYS ensure that there is adequate ventilation during transportation and before entering load compartment to unload product.
- ALWAYS carry a carbon dioxide (solid) Material Safety Data Sheet in the cab or driver's compartment of any vehicle that is carrying dry ice.
- ALWAYS ensure that the heating / air supply is switched to draw in 'fresh air' from outside the vehicle.
- ALWAYS unload product as soon as possible at the end of the journey and move to a suitable storage location.

9 Import and Transfer

When exporting animal products overseas it is important to bear in mind that the receiving country may have import licensing controls. It is normally the responsibility of the receiving organisation to arrange this. Use of one of the University approved couriers is strongly advised as they can provide the relevant information and help ensure the import requirements of the country of destination are met.

9.1 Import of Animal Pathogens

The import and transfer of animal pathogens or carriers are subject to licensing controls under the Importation of Animal Pathogens Order 1980.

Under the Importation of Animal Pathogens Order 1980 (IAPO):

- an "animal pathogen" means any collection or culture of organisms or any derivative either on its own or in recombinant form of such collection or culture of organisms which may cause disease in animals or poultry.
- a "carrier" means "any living creature except man which may carry or transmit an animal pathogen or the tissue, cell culture, body fluid, excreta, carcass or part of a carcass of such creature by or by means of which an animal pathogen may be transmitted.

For the purposes of the Order, "animals" means cattle, sheep, goats and all other ruminating animals, horses and swine, and "poultry" means domestic fowls, turkeys, geese, ducks, guinea-fowls, pigeons, pheasants, partridges and quail.

The Department of Environment Food and Rural Affairs web site contains a list of animal pathogens which require an import license.
https://www.gov.uk/government/publications/animal-pathogens-guidance-on-controls

9.2 Import from another member state of the EC

An IAPO licence is not required to import an animal pathogen or carrier from another Member State of the European Communities. However, if the material to be imported is a specified animal pathogen or a carrier of a specified animal pathogen a licence will need to be obtained prior to importation to authorise the movement of the material from the port of entry to the laboratory for which it is destined in England. Such licences will only be issued where the laboratory of destination is already licensed under the Specified Animal Pathogens Order 1998 to hold or work with the specified animal pathogens concerned.

9.3 Import from a country outside of the EC

IAPO prohibits the import into England from a country that is not a Member State of the European Communities of any animal pathogen or carrier except under the authority of a licence in writing issued by the Secretary of State for Environment, Food and Rural Affairs and in accordance with the conditions of that licence.

9.4 Licences under IAPO

Licences usually stipulate the manner in which the animal pathogen or carrier must be prepared, treated and packed prior to importation, the containment conditions under which it must be handled while it is in England and the method by which it and its derivatives must be disposed of, if it is not re-exported. Licences are normally valid for two years, to provide for the importation of the material and the completion of work on the material in the laboratory, following importation.

9.5 Applying for an import licence under IAPO

If you need to apply for a licence to import an animal pathogen or carrier from a country outside the EC an application form for a licence under the Importation of Animal Pathogens Order 1980 (IAPO) can be downloaded the DEFRA web site.
https://www.gov.uk/government/publications/animal-pathogens-guidance-on-controls

9.6 Transport within the UK and to overseas destinations

It is important to remember that many animal pathogens can also infect humans. Therefore packaging and labelling requirements detailed in Section 4 of this document should be applied.

9.7 Import of plants, plant material, plant tests, soil and growing medium

There are many plant pests and diseases, which if they were to become established in Great Britain could, cause serious damage to crops and plant. To guard against such an eventuality official controls, arising out of EU and UK legal provisions, apply to the import, movement and keeping of plants, plant pests and other material.

Information on the licensing procedures, forms and lists of prohibited plants and materials etc. can be found on the DEFRA web site.

The Plant Health & Seeds Inspectorate for Nottingham can be contacted for advice on 0115 929 1191.

There is also detailed information on the DEFRA web site.
https://www.gov.uk/guidance/importing-plants-fruit-vegetables-or-plant-material-to-the-uk