Chapter 8
Carriage of Dangerous Goods by Air

The subject of carriage of dangerous goods by air is addressed in Annex 18 to the Chicago Convention. The material in this Annex was developed by the Air Navigation Commission in response to a need expressed by Contracting States for an internationally agreed set of provisions governing the safe transport of dangerous goods by air. In order to assist in achieving compatibility with the regulations covering the transport of dangerous goods by other modes of transport, the provisions of this Annex are based on the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods and the Regulations for the Safe Transport of Radioactive Materials of the International Atomic Energy Agency. More than half of the cargo carried by all modes of transport in the world is dangerous cargo—explosive, corrosive, flammable, toxic and even radioactive. These dangerous goods are essential for a wide variety of global industrial, commercial, medical and research requirements and processes. Because of the advantages of air transport, a great deal of this dangerous cargo is carried by aircraft.

ICAO recognizes the importance of this type of cargo and has taken steps to ensure that such cargo can be carried safely. This has been done by adopting Annex 18, together with the associated document *Technical Instructions for the Safe Transport of Dangerous Goods by Air*. Other codes have existed for regulating the carriage of dangerous goods by air, but these did not apply internationally or were difficult to enforce internationally and, moreover, were not compatible with the corresponding rules of other transport modes.

Annex 18 specifies the broad Standards and Recommended Practices to be followed to enable dangerous goods to be carried safely. The Annex contains fairly stable material requiring only infrequent amendment using the normal Annex amendment process. The Annex also makes binding upon Contracting States the provisions of the Technical Instructions, which contain the very detailed and numerous instructions necessary for the correct handling of dangerous cargo. These require frequent updating as developments occur in the chemical, manufacturing and packaging industries, and a special procedure has been established by the Council to allow the Technical Instructions to be revised and reissued regularly to keep up with new products and advances in technology.

The ICAO requirements for dangerous goods have been largely developed by a panel of experts which was established in 1976. This panel continues to meet and

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recommends the necessary revisions to the Technical Instructions. As far as possible the Technical Instructions are kept aligned with the recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods and with the regulations of the International Atomic Energy Agency. The use of these common bases by all forms of transport allows cargo to be transferred safely and smoothly between air, sea, rail and road modes.

The ICAO requirements for the safe handling of dangerous goods firstly identify a limited list of those substances which are unsafe to carry in any circumstances and then show how other potentially dangerous articles or substances can be transported safely. The nine hazard classes are those determined by the United Nations Committee of Experts and are used for all modes of transport.

Class 1 includes explosives of all kinds, such as sporting ammunition, fireworks and signal flares. Class 2 comprises compressed or liquefied gases which may also be toxic or flammable; examples are cylinders of oxygen and refrigerated liquid nitrogen. Class 3 substances are flammable liquids including gasoline, lacquers, paint thinners, etc. Class 4 covers flammable solids, spontaneously combustible materials and materials which, when in contact with water, exit flammable gases (examples are some powdered metals, cellulose type film and charcoal).

Class 5 covers oxidizing material, including bromates, chlorates or nitrates; this class also covers organic peroxides which are both oxygen carriers and very combustible. Poisonous or toxic substances, such as pesticides, mercury compounds, etc., comprise Class 6, together with infectious substances which must sometimes be shipped for diagnostic or preventative purposes. Radioactive materials are in Class 7; these are mainly radioactive isotopes needed for medical or research purposes but are sometimes contained in manufactured articles such as heart pacemakers or smoke detectors. Corrosive substances which may be dangerous to human tissue or which pose a hazard to the structure of an aircraft are dealt with in Class 8 (for example, caustic soda, battery fluid, paint remover). Finally, Class 9 is a miscellaneous category for other materials which are potentially hazardous in air transport, such as magnetized materials which could affect the aircraft's navigational systems.

8.1 Radioactive Materials

Doctors and laboratory technologists use radioactive materials for medical diagnosis and therapy. These materials are also used for the sterilization of medical products,[1] power production and other industrial purposes. The most critical issue

[1]Radioactive material produce radiation to sterilize health care products including surgical gloves, syringes, catheters and bandagers. It is reported that about 200 radiation sterilization facilities operate in more than 50 countries and around 45% of all medical disposables are sterilized using radiation. See Arumugam Nagarajan Nandakumar, Cargo Controversy . . .

in this regard is that radio isotopes[2] which have short life spans need to be transported to patients preferably by air. The problem arises when the air carrier refuses to carry such radioactive medical supplies.[3] It is reported that 60% of such denials relate to air transport and 30% to maritime transport.[4]

Radio active cargo, or class 7 materials[5] as they are defined technically, are carried by means of transport (whether by air, sea or rail/road transport) in accordance with national and international regulations. The latter are regulations of the International Atomic Energy Agency (IAEA)[6] According to the IAEA, refusal to carry such cargo include the following reasons:

- Apprehension and negative perception on the part of carriers and public authorities about radiation. This is due, in part, to lack of information;
- Concerns about extent and costs of training. The reason for this apprehension is the belief on the part of carriers that extensive training has to be given to those involved in transportation of goods if they are to handle radioactive cargo. The IAEA confirms that this concern is unjustified as all concerned with handling cargo are expected to be given a training session which lasts only for half a day;
- Multiplicity of authorities regulating the carriage of radioactive cargo and the numerous regulations promulgated nationally;
- The absence of awareness of the compelling need to transport radioactive medicines and the adequacy of the safety standards in practice; and
- Apprehension of the costs of insurance in the event of accidents.[7]

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[2]A radionuclide is an atom with an unstable nucleus. The radionuclide undergoes radioactive decay by emitting a gamma ray(s) and/or subatomic particles. Radionuclides may occur naturally, but can also be artificially produced. Radionuclides are often referred to by chemists and biologists as radioactive isotopes or radioisotopes, and play an important part in the technologies that provide us with food, water and good health. However, they can also constitute real or perceived dangers.

[3]IAEA reports that denials are occurring all parts of the world. It is reported that airlines such as British Airways and KLM ban radioactive material while Northwest Airlines bans shipments on al its passenger planes. Several Asian airlines are also reported to opt out of carriage of radioactive material. See Miller (2004) at 5(1).

[4]*Ibid*.

[5]The International Civil Aviation Organization's Technical Instructions for the Safe Transport of Dangerous Goods by Air define what are termed as Class 7 material as "any material containing radionuclides where both the activity concentration and the total activity in the consignment exceed the values stipulated in 7.7.2.1 to 7.7.2.6 of Doc 9284, AN/905 (2007–2008 Edition)."

[6]TM-3059, Working Paper No. 07 Rev.0, IAEA: Vienna (14–16 November 2006) at 1.

[7]Basis for Opening Remarks for the International Steering Committee on Denial of Shipments of Radioactive Material by the Deputy Director, General Nuclear Safety and Security, Mr. Tomihitro Taniguchi, TM 33059, Working Paper 07, Rev. 0 See Also, Report of the International Atomic Energy Agency's Fact Finding Discussion Forum on Denial and Delays of Shipments, IAEA Headquarters, 14–16 November 2006, TM 33059, Information Paper No 02, Rev.0. 3.which additionally listed generic reasons for denial as requirements imposed on competent authorities both within and between countries; requirements for a carrier or port handlers radiation protection programme; travel through "nuclear free zones" that capture non-nuclear material; port docking prohibitions of vessels containing class 7 material; and some ports not permitting transhipment of Class 7 cargo though permitting entrance of materials for use in their own countries.

The IAEA also records that, over the past 50 years, there has been no substantial risk from the transport of radioactive material.[8]

The IAEA General Conference in 2003 convened on 19 September 2003 adopted Resolution which called for discussions to address the problems associated with refusal of shipments.[9] The Conference requested IAEA to develop an Action Plan, based on the results of the Conference. The Action Plan for the Safety of Transport of Radioactive Material, approved by the Board of Governors in March 2004, called upon the Secretariat *inter alia* to establish a fact finding discussion forum addressing the concerns of relevant entities which may include IMO, ICAO, IATA[10] and IFALPA and WCO.[11]

At a meeting held in May 2006 at the IAEA Headquarters on the subject of denial of shipments of radioactive material, it was recognized that a third of marine carriers do not transport class 7 cargo. Those carriers who accepted such cargo would either carry the cargo to their own States or require an indemnity from the State concerned. The meeting also noted that although there was a Resolution of the International Maritime Organization (IMO) requiring ships to carry class 7 cargo, air carriers could not be forced to do so. The International Civil Aviation Organization said for the record that air carriers could only be persuaded to carry class 7 cargo, and not forced to do so.[12] The meeting also recognized that although pilots in command were the major protagonists in refusing carriage of radioactive medicines, they were only a small part of responsibility of the pilot and the pilot had to give written reasons as to why the carriage of such goods was refused.[13] It must be noted that, at a meeting of the IAEA held in September 2005, the International

[8] *Id.* 3.

[9] GC(47)/RES/7.C/.

[10] The International Air Transport Association, an association of air carriers, was formed in 1919 as the International Air Traffic Association. Encapsulated in IATA's overall mission are seven core objectives: to promote safe, reliable and secure air services; to achieve recognition of the importance of a healthy air transport industry to worldwide social and economic development; to assist the air transport industry in achieving adequate levels of profitability; to provide high quality, value for money, industry-required products and services that meet the needs of the customer; to develop cost effective, environmentally-friendly standards and procedures to facilitate the operation of international air transport; to identify and articulate common industry positions and support the resolution of key industry issues; and to provide a working environment which attracts, retains and develops committed employees.

[11] The World Customs Organization (WCO) is an inter governmental organization that helps Members (currently Customs administrations from 169 countries) communicate and co-operate on customs issues. It was established in 1952 as the Customs Co-operation Council; it adopted its current name in 1994. Headquartered in Brussels, Belgium, it develops agreed rules on customs procedures and provides advice and assistance to customs services. It has established an international standard classification of commodities called the Harmonized Commodity Description and Coding System which is used to classify goods for tariff purposes the application of tariffs. The WCO has 169 members.

[12] Denial of Shipment of Radioactive Material TM-28826, IAEA Headquarters, Vienna (8–12 May 2006), *TM 33059*, working Paper No.03, Rev 0 paragraph 5.3.

[13] *Ibid.*

Federation of Airline Pilots' Associations (IFALPA) submitted a paper which recognized that there has been an increase in recent years of the number of denials of shipments of radioactive materials by airlines, airports, pilots and States and that such denials are capable of posing problems for hospitals, patients and suppliers of radio pharmaceuticals. The IFALPA Dangerous Goods Committee supported the transport of all classes of dangerous goods, including class 7 material as long as the transport complied with the provisions of Annex 18 to the Chicago Convention on the Carriage of Dangerous Goods by Air and associated Technical Instructions for the Safe Transport of Dangerous Goods. IFALPA emphasized the fact that in consideration of whether a denial is appropriate or not, it was clear that safety is always the overriding factor and that other issues never have priority.[14]

The May 2006 meeting of IAEA was followed by a second meeting in Vienna from 14 to 16 November 2006 where an international steering committee on denial of shipment was established.[15] The meeting recorded IAEA's concern about the denial and delay involved in the carriage of radioactive material. This concern is personified in a resolution adopted by IAEA during its ninth plenary meeting on 30 September 2005, welcomed *inter alia* the progress made in conjunction with IFALPA on the problems related to refusals of shipments of radioactive materials (in particular for medical applications) and looked forward to a satisfactory resolution of the issue, while encouraging the IAEA Secretariat to continue addressing the denial of shipping issue.[16]

The ICAO Dangerous Goods Panel, at its meeting of the Working Group of the Whole convened at Abu Dhabi from 4 to 8 October 2004 recognized that the IAEA believed that the problem of denial of radioactive medicines on board aircraft was linked to public perception and training rather than to a lack of safety[17]

[14]IFALPA, The Global Voice of Pilots, July 2005, reproduced in International Steering Committee on Denials of Shipments of Radioactive Material, TM-33059 (IAEA), Information Paper No. 05., Rev. 0. The Working Group of the ICAO Dangerous Goods Panel has also recognized that medical isotopes were beneficial to the delivery of healthcare and due to the time sensitive nature of the products the air mode is fundamental to ensuring such products can be used upon delivery to a health facility. Consequently, widespread denials of such shipments were not in the public interest. See Report of the Meeting of the Working Group of the Whole WG/04, *DGP-WG/05–WP/1* 7.2.2 at p. 16.

[15]The mandate of the steering committee is to develop an action plan to prevent cases of denials of shipments and to alleviate the hardships to users of radioactive material that have been denied or delayed; determine the milestones in the implementation of the action plan; identify the specific role that could be played by each Member of the Committee and; recommend a mechanism for monitoring progress. See IAEA *TM 33059*, Working Paper No. 02, Rev.1 at 1.

[16]Measures to Strengthen International Cooperation in Nuclear, Radiation and Transport Safety and Waste Management, *GC(49)/RES/9*, Forty Ninth Regular Session, September 2005, Item 15 of the Agenda, Clause 12. It is noted that the IMO Assembly, at its 24th Session, Adopted Resolution A.984(24) on Facilitation of the Carriage of IMDG Code Class 7 Radioactive Materials Including Those in Packaged Form Used in Medical or Public health Applications, 6 February 2006, which endorsed work done by and between IAEA and IFALPA.

[17]Report of the Meeting of the Working Group of the Whole WG/04, *DGP-WG/05—WP/1,* Clause 7.2.1 at p. 16.

The Working Group was of the view that since the issue was related to public and political opinion, a start should be made with developing more public outreach and providing more background on the safety of such shipments.[18] The Working Group also noted that ICAO has been requested by IAEA to communicate with IFALPA to clarify to its members the correct separation rules for transport of radioactive material, animals, passengers and crews; to support the inter-agency meetings since they are a beneficial forum to discuss issues such as denials of shipments and request that they be promoted; support the shortened training plan of IAEA and make it widely available and support the communication resource to be made available by IAEA and make it widely available.[19]

8.2 Dangerous Pathogens

A Special Sub Committee of the Legal Committee of ICAO met in Montreal from 3 to 6 July 2007 to discuss the preparation of one or more instruments addressing new and emerging threats. One of the issues addressed at this meeting was the unlawful transport of biological, chemical, nuclear weapons and other dangerous substances on board aircraft.

Earlier, the Secretary General of ICAO, Dr. Taieb Cherif, addressing the China Civil Aviation Development Forum on 9 May 2007, stated that although the global air transport system remains as secure as ever, yet events such as the illegal terrorist plot in the United Kingdom in the Summer of 2006, potentially involving liquids used as explosives, reminds us how vulnerable the system is. On another aviation platform, Giovanni Bisignani, Director General and CEO of the International Air Transport Association (IATA) stressed at its Annual General Meeting held in Vancouver from 3 to 5 June 2007 that the industry has changed tremendously in 5 years since 9/11. Six years after the tragic events of 2001, air travel is much more secure but there are unlimited ways to attack the aircraft integrity. He added that there is no perfect security system and terrorists change tactics and weapons. Bisignani rightly pointed out that terrorists are studying what measures the industry is adopting; and that all the air industry can do is make the system strong enough to constitute sufficient deterrent and make aircraft a harder target to hit.

The recreation of the Spanish flu virus that killed 50 million people worldwide in 1918 proves that deadly viruses are being revisited and are undergoing genetic modification. This brings to bear the inevitable question as to whether there is enough security to stop them from falling into the wrong hands. There is also the ominous prospect—that transportation of these dangerous pathogens by air

[18] *Id*. Clause 7.2.8.

[19] Denial of Shipments of Radioactive Materials, paper [presented by IAEA at the Meeting of the Working Group of the Whole of the ICAO Dangerous Goods Panel (Au Dhabi, 4–8 October 2004), *DGP-WP/04-WP/18, Appendix*.

would leave aviation vulnerable. This chapter examines precautionary measures currently being taken and the legal and regulatory significance of such measures.

The leakage of dangerous pathogens[20] from laboratories presents an ominous analogy to the aviation sector in that the same could well occur in the carriage of such dangerous goods by air. Although past instances of escaping dangerous pathogens are small in number, nonetheless their occurrence and the threat posed to the wellbeing of humanity cannot be underestimated. In 2002 when Anthrax spores escaped from two military laboratories in the United States, the authorities agreed that the leakage was due to a security lapse.[21] In 2003 a string of such leakages occurred in Asia, this time of the SARS virus.[22]

It is now known that the laboratory is not the only place where security lapses could occur. Modern exigencies require samples of deadly pathogens to be transported regularly over vast distances to reach researchers across the world. This calls for a delicate balance between recognizing the compelling need for scientists to exchange and collectively use different strains in order to identify naturally occurring diseases and mutations on the one hand and ensuring that the transport of these infectious substances[23] are carried out according to United Nations Model Regulations[24] on the other. These model regulations are the base upon which specific provisions for the carriage by air are formulated in the packing of samples of infectious pathogens for transportation by air. The shipment of infectious agents or diagnostic specimens by air must comply with local, national and international regulations. International air transport regulations are contained in various documentation of the International Civil Aviation Organization and *Dangerous Goods Regulations*—an annual publication of the International Air Transport Association

[20]Pathogens are microorganisms (including bacteria, viruses, rickettsia, parasites, fungi) or recombinant microorganisms (hybrid or mutant) that are known or are reasonably expected to cause infectious disease in humans or animals.

[21]An year earlier, a covert event occurred in October 2001 when anthrax spores were sent through the mail exposing persons in the eastern USA to contaminated mail resulting in deaths, illnesses and identified exposures to Anthrax. Overt, announced events, in which persons are warned that an exposure has occurred, have taken place in the United States, although most of these were determined to have been hoaxes, that is, there were no true exposures to infectious agents.

[22]The leakages occurred in China, Taiwan and Singapore. See Air-Tight Security, *Intersec*, June 2007 33–35 at 34.

[23]Infectious substances are defined as substances known to contain, or reasonably expected to contain, pathogens.

[24]The United Nations has developed recommendations on model regulations for the transport of dangerous goods which recognize that various chemical combinations and mixtures have different requirements in packing for the purpose of transport. See Recommendations on the Transport of Dangerous Goods, Model Regulations, Volume 1, Fourteenth Revised Edition: 2005, Chapter 2.6. p. 113–114. Furthermore, the United Nations Model regulations contain packing instructions for primary, secondary and outer packaging of hazardous goods. See Model Regulations *Id*. Volume 11, Instruction P620 at p. 70. Specimens (human, animal, food, environmental, etc.) known or reasonably expected to contain pathogens are now to be classified as infectious substances. When these specimens are transported/shipped for any purpose, including initial or confirmatory testing for the presence of pathogens, they are to be packaged and shipped as infectious substances.

published in January, and usually revised on an yearly basis. These ICAO and IATA documents will be discussed in some detail later in this article.

Dangerous Goods Regulations are implicitly accompanied by the requirement that anyone requesting samples should provide the necessary evidence that they are registered with their government for the receipt of such substances and that they have the appropriate facilities, staff and security measures in place to carry out work on the samples received.

There are four diseases recognized as most likely to be associated with bioterrorism potential: anthrax; botulism; plague; and smallpox. Although these agents are considered to be the most likely to be used in bioterrorism they are not usually prioritized in any order of importance. There are other agents which offer potential to bioterrorism such as those causing tularemia, brucellosis, Q fever, viral hemorrhagic fevers, viral encephalitis, and a disease associated with staphylococcal enterotoxin B.

There are others which cause security experts concern as emergent threats to security through bio terrorism. These are Severe Acute Respiratory Syndrome (SARS), monkeypox and pandemic influenza. These are naturally occurring diseases,[25] which are of concern because they are new and/or epidemic.[26] Outbreaks of dangerous pathogens may occur naturally or as covert or overt events. An outbreak is suspected only upon recognition of unusual disease clusters or symptoms.[27] For example, SARS was recognized as a naturally occurring event initially from Southeast Asia in February 2003.

8.3 Bioterrorism

A bioterrorism attack is the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants. These agents are typically found in nature, but it is possible that they could be changed to increase their ability to cause disease, make them resistant to current medicines, or to

[25]It is widely recognized that SARS is not a disease but a syndrome. See generally, Abeyratne (2002), pp. 53–80.

[26]Rapid response to a dangerous pathogen event requires prompt identification of its onset. Because of the rapid progression to illness and potential for dissemination of some of these agents, it may not be practical to await diagnostic laboratory confirmation. Instead, it is necessary to initiate a response based on the recognition of high-risk syndromes, i.e., typical combination of clinical features of the illness at presentation that might alert healthcare practitioners to the possibility of an outbreak. Examples of syndromes potentially resulting from infections with dangerous pathogens include: encephalitis/meningitis, hemorrhagic mediastinitis, severe pneumonia, papulopustular rash, hemorrhagic fever, descending paralysis and nausea/vomiting/diarrhoea.

[27]An outbreak is usually identified consequent to a rapidly increasing disease incidence (e.g., within hours or days) in a normally healthy population, such as unexplained death with fever in a non-trauma patient, or a botulism-like syndrome, meningitis or encephalitis in more than one patient.

increase their ability to be spread into the environment. Biological agents can be spread through the air, through water, or in food. Terrorists may use biological agents because they can be extremely difficult to detect and do not cause illness for several hours to several days. While some bioterrorism agents, such as the smallpox virus, can be spread from person to person some agents such as anthrax are incapable of doing so.

There have been several noteworthy instances of bioterrorism in the past[28] as early as 1915,[29] which send an ominous message that it is a distinct possibility in the aviation context. Until recently in the United States of America, most biological defense strategies have been geared to protecting soldiers on the battlefield rather than looking after ordinary people in cities. In 1999, the University of Pittsburgh's Center for Biomedical Informatics deployed the first automated bioterrorism detection system, called RODS (Real-Time Outbreak Disease Surveillance). RODS is designed to draw collect data from many data sources and use them to perform signal detection, that is, to detect a possible bioterrorism event at the earliest possible moment. RODS, and other similar systems, collect data from sources including clinical data, laboratory data, and data from over-the-counter drug sales. In 2000, Michael Wagner, the co director of the RODS laboratory, and Ron Aryel, a subcontractor, conceived of the idea of obtaining live data feeds from "non-traditional" (non-health-care) data sources. The RODS laboratory's first efforts eventually led to the establishment of the National Retail Data Monitor, a system which collects data from 20,000 retail locations nation-wide.

On February 5, 2002, President Bush visited the RODS laboratory and used it as a model for a $300 million spending proposal to equip all 50 states with bio surveillance systems. In a speech delivered at the nearby Masonic temple, Bush compared the RODS system to a modern "DEW" line (referring to the Cold War ballistic missile early warning system).

The principles and practices of bio surveillance, a new interdisciplinary science, were defined and described in a handbook published in 2006.[30] Data which

[28]In 1984 followers of the Bhagwan Shree Rajneesh attempted to control a local election by incapacitating the local population by infecting salad bars in 11 restaurants, doorknobs, produce in grocery stores and other public domains with *Salmonella typhimurium* in the city of The Dalles, Oregon. The attack caused about 751 people to get sick (there were no fatalities). This incident was the first known bioterrorist attack in the United States in the twentieth century. In September and October of 2001, several cases of anthrax broke out in the United States which were reportedly caused deliberately. This was a well-publicized act of bioterrorism. It motivated efforts to define biodefense and biosecurity.

[29]In 1915 and 1916, Dr. Anton Dilger, a German–American physician used cultures of anthrax and glanders with the intention of committing biological sabotage on behalf of the German government. Other German agents are known to have undertaken similar sabotage efforts during World War I in Norway, Spain, Romania and Argentina.

[30]Handbook of Bio surveillance, Michael Wagner, Andrew Moore and Ron Aryel, ed. Elsevier: New York, 2006. Bio surveillance is the science of real-time disease outbreak detection. Its principles apply to both natural and man-made epidemics (bioterrorism). It is worthy of note that in addition to activity in this field in the United States, there is also work being done in Europe,

potentially could assist in early detection of a bioterrorism event include many categories of information. Health-related data such as those collected from hospital computer systems, clinical laboratories, electronic health record systems, medical examiner record-keeping systems, 911 call center computers, and veterinary medical record systems could be of help in the fight against bioterrorism. Researchers are also considering the utility of data generated by ranching and feedlot operations, food processors, drinking water systems, school attendance recording, and physiologic monitors, among others. Intuitively, one would expect systems which collect more than one type of data to be more useful than systems which collect only one type of information (such as single-purpose laboratory or 911 call-center based systems), and be less prone to false alarms. This indeed appears to be the case.

The inherently uncontrollable nature of a dangerous pathogen makes bioterrorism unattractive as a warfare strategy. However, the potential power of genetic engineering cannot be marginalized or underestimated and the compelling need for continuing vigilance cannot be ignored.

8.4 Legal and Regulatory Issues

At its 33rd session held in Montreal from 25 September–5 October 2001, the ICAO Assembly adopted Resolution A33-1[31] which was a direct response to the terrorist acts of 9/11. The Resolution recognized that a new type of threat was posed to civil aviation which required new concerted efforts and policies of cooperation on the part of States. The Resolution also urges all ICAO member States to ensure, in accordance with Article 4 of the Chicago Convention, that civil aviation is not used for any purpose inconsistent with the aims of the Convention, and to hold accountable and punish severely those who misuse civil aircraft as weapons of destruction, including those responsible for planning and organizing such acts or for aiding, supporting or harbouring perpetrators. It also called upon States to cooperate with each other in this endeavour and to ensure that ICAO Standards and Recommended Practices (SARPs) relating to aviation security are adhered to. Finally the Resolution directed the Council of ICAO and the Secretary General to act urgently to address new and emerging threats to civil aviation, in particular to review the adequacy of existing aviation conventions on security.

In response to the requirement of A33-1, that ICAO act with some urgency to address new and emerging threats to civil aviation, an ICAO Special Sub Committee meeting of the Legal Committee on the subject of preparation of one or more

where disease surveillance is beginning to be organized on a continent-wide scale needed to track a biological emergencies. The system not only monitors infected persons, but also attempts to discern the origin of the outbreak.

[31]Resolution A33-1, Declaration on misuse of civil aircraft as weapons of destruction and other terrorist acts involving civil aviation, Assembly Resolutions in Force (as of 8 October 2004) ICAO Doc. 9848. at VII-1.

instruments addressing new and emerging threats was held at ICAO Headquarters from 3 to 6 July 2007.[32] At this meeting, Australia submitted a proposal[33] to prohibit the intentional and unlawful transport by air of particularly dangerous goods and fugitives. In this paper, Australia quoted the Preamble[34] to the Chicago Convention and emphasized that ICAO was created to help ensure the safe and orderly growth of civil aviation and to encourage the operation of civil aircraft for peaceful purposes. It was also the view of Australia that there were gaps in the international legal framework with regard to the unlawful transport of biological, chemical and legal weapons and other dangerous material on board civil aircraft and that the international aviation community had a responsibility to address these lacunae and shortcomings, particularly when an opportunity such as the one presented through the ICAO meeting arose.

The Sub Committee meeting had the opportunity, through the Australian paper, to note other international legislation on the transportation of dangerous materials. For example, the 2005 Protocol to the Convention for the Suppression of Unlawful Acts Against the Safety of Maritime Navigation which underscores the extreme danger of use by unlawful activity of maritime transport of nuclear, chemical or biological weapons.[35] Additionally, there are other guidance material, such as those issued by the World Health Organization[36]which provide practical guidance to facilitate compliance with current international regulations for the transport of infectious substances[37] and patient specimens by all modes of transport, both nationally and internationally, and include the changes that apply from 1 January

[32]One of the terms of reference of the Sub Committee as agreed by the ICAO Council was: to prepare, in light of A33-1 and the guidance of the Council, one or more draft instruments addressing the new and emerging threats to civil aviation. See Special Sub Committee on the Preparation of One or More Instruments Addressing New and Emerging Threats, Introductory Note, *LC/SC-NET-WP/1*, 29/05/07 at p. 2.

[33]Proposal to Prohibit the International and Unlawful Transport by Air of Particularly Dangerous Goods and Fugitives, *LC/SC-NET-WP/3*, 5/07/07.

[34]The Preamble to the Chicago Convention recognizes that the future development of international civil aviation can greatly help to create and preserve friendship and understanding among the nations and peoples of the world, and yet its abuse can become a threat to the general security. It also states that it is desirable to avoid friction and to promote co-operation between nations and peoples upon which the peace of the world depends. In pursuance of these objectives, governments signed the Convention that contains certain principles and arrangements in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically.

[35]*Supra*, note 30 in this chapter at p. 1–2.

[36]Guidance on Regulation for the Transport of Infectious Substances, World Health Organization, September 2005, WHO/CDS/CSR/LYO/2005.22.

[37]For the purposes of transport, infectious substances are defined as substances which are known or are reasonably expected to contain pathogens. Pathogens are defined as microorganisms (including bacteria, viruses, rickettsiae, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals. The definition is applied to all specimens except those explicitly excluded in the WHO Guidance Material.

2005.[38] The WHO regulations categorically state that The *Technical Instructions for the Safe Transport of Dangerous Goods by* are the legally binding international regulations.[39] IATA *Dangerous Goods Regulations* (DGR) that incorporate the ICAO provisions and may add further restrictions (where necessary such restrictions are included in these guidelines). The ICAO rules apply on all international flights. For national flights, i.e. flights within one country, national civil aviation authorities apply national legislation. This is normally based on the ICAO provisions, but may incorporate variations. State and operator variations are published in the ICAO Technical Instructions and in the IATA Dangerous Goods Regulations. The WHO guidelines also contain detailed packing instructions regarding infectious substances.[40]

With regard to legal issues, there appear to be some options available to ICAO and its member States to seek a way forward in tightening security with regard to the carriage by air of infectious substances. One legal option would be to include a Standard in Annex 17 on Aviation Security. pertaining to the spread of communicable diseases through acts of unlawful interference with civil aviation. Such a provision could require that States take all necessary measures both already established at international law and adopted as national measures within States to ensure that there is no room for the possibility of unlawful carriage of infectious pathogens within and out of their territories. A cross reference and Standard could also be made covering the safety aspects of the threat of bioterrorism. The terrorist attacks in the USA on 11 September 2001 and, more specifically, the subsequent "anthrax" scare, brought to the world's attention the threat of deliberate attacks through the use of biological, chemical or nuclear agents. In the event of a bio-terrorist attack the public health response is critical in identifying the nature of the attack and the appropriate response. Therefore a concomitant Standard would have to be introduced in Annex 9 (Facilitation) that would supplement the security Standard by requiring States to ensure that civil protection measures are in place to deal with

[38]The international regulations for the transport of infectious substances by any mode of transport are based upon the Recommendations made by the Committee of Experts on the Transport of Dangerous Goods (UNCETDG), a committee of the United Nations Economic and Social Council. The Recommendations are presented in the form of Model Regulations. The United Nations Model Regulations are reflected in international law through international modal agreements.

[39]*Supra*, note 36 in this chapter at p. 2.

[40]The system of packaging is recommended for use all infectious substances. It consists of three layers as follows: Primary receptacle—which is a primary watertight, leak-proof receptacle containing the specimen. The receptacle is packaged with enough absorbent material to absorb all fluid in case of breakage. Secondary packaging—which is a second durable, watertight, leak-proof packaging to enclose and protect the primary receptacle(s). Several cushioned primary receptacles may be placed in one secondary packaging, but sufficient additional absorbent material shall be used to absorb all fluid in case of breakage. Outer packaging—which are secondary packagings placed in outer shipping packagings with suitable cushioning material. Outer packagings protect their contents from outside influences, such as physical damage, while in transit. The smallest overall external dimension shall be 10 × 10 cm. Each completed package is normally required to be marked, labelled and accompanied with appropriate shipping documents (as applicable). *Supra*, note 19 in Chap. 1 at p. 6.

these needs. There must essentially be co-ordination of public health emergency planning and preparedness and the availability of appropriate treatment.

In terms of legal practicality, it is questionable whether the mere introduction of a Standard in the two Annexes would cover all tracks and ensure legal protection to humankind against an offence committed on board an aircraft with the use of an infectious substance. Owing to the unknown dimensions, reach or consequences of the release of such infectious agents, it is doubtful whether an offender would use such an agent as anything more than a threat in terms of taking control of an aircraft or committing an offence on board. However, the possibility of a terrorist using such a weapon to destroy a community of persons such along the lines of the events of 9/11 cannot be ruled out. Therefore, as an adjunct to the two new Annex provisions, consideration could be given to recognize the unlawful carriage and/or use of infectious pathogens as a reckonable offence under international convention. This could be considered under a possible Protocol to an existing Convention on unlawful interference with civil aviation.

8.5 ICAO Regulations

The ICAO Assembly, at its 18th Session held in Vienna on 15 June–7 July 1971 adopted Resolution A18-10[41] whereby the Assembly requested the ICAO Council to ensure, with respect to the technical aspects of air transportation security, that the subject of air transportation security continues to be given adequate attention by the Secretary General, with a priority commensurate with the current threat to the security of air transportation. This Resolution exemplifies the continuing threat to aviation posed by potential security lapses which has permeated the air transport industry for several decades. New and emerging threats to aviation security are therefore not relegated to the post 9/11 era alone.

The request made by the Assembly at its 18th Session was reiterated at its 35th Session, held in Montreal on 28 September to 8 October 2004, where, by Resolution A35-9[42] the Assembly, urged the Council to continue to attach the highest priority to the adoption of effective measures for the prevention of acts of unlawful interference commensurate with the current threat to the security of international civil aviation and keep up to date the provisions of Annex 17 to the Chicago Convention. In this regard Annex 17 contains extracts from Annex 18 (The Safe Transport of Dangerous Goods by Air) which require each Contracting State to take necessary measures to achieve compliance with the detailed provisions contained in the Technical Instructions for the Safe Transport of Dangerous Goods by Air

[41]A18-10, Additional Technical Measures for the Protection of the Security of International Air Transport.

[42]A35-9—Consolidated statement of continuing ICAO policies related to the safeguarding of international civil aviation against acts of unlawful interference, ICAO Doc 9848 cited *supra*, note 13 in Chap. 1 at p. VII-5.

(Doc 9284), which are approved and issued periodically in accordance with procedure established by the ICAO Council. The requirement also covers compliance with any amendment to the Technical Instructions.[43]

Annex 17 to the Chicago Convention also contains some general provisions that may apply to the illegal carriage by air of infectious pathogens. Standard 5.1.2 devolves responsibility upon Contracting States to ensure that, when reliable information exists that an aircraft may be subject to an act of unlawful interference, that the aircraft is searched for illegal weapons, explosives and other dangerous devices. The main preventive objective contained in Standard 4.1 which ensures that States establish measures to prevent weapons, explosives or any other dangerous devices articles or substances which may be used to commit an act of unlawful interference and which are not authorized, from being carried on board.

Annex 18—on the safe transport of dangerous goods by air—applies to all international operations of civil aircraft and forbids, in Standard 4.1, the transport of dangerous goods by air except as established in the Annex and detailed specifications and procedures provided in the Technical Instructions. he Annex was developed by the Air Navigation Commission of the Organization in response to a need expressed by States for an internationally agreed set of provisions governing the safe transport of dangerous goods by air. The Annex draws the attention of the States to the need to adhere to Technical Instructions for the Safe Transport of Dangerous Goods by Air[44] developed by ICAO, according to which packaging used for the transportation of dangerous goods by air shall be of good quality and shall be constructed and securely closed so as to prevent leakage[45] and labelled with the appropriate labels.[46]

Annex 18 clearly identifies in Chapter 8 requirements that the carrier has to comply with when accepting dangerous goods for transport. According to these requirements the operator has to ensure that dangerous goods are accompanied by a completed dangerous goods transport document, except when the Technical Instructions indicate that such a document is not required.[47] The carrier is also required not to accept dangerous goods until the package, overpack or freight container containing the dangerous goods has been inspected in accordance with acceptance procedures contained in the Technical Instructions.[48]

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[43]See Attachment to Annex 17 to the Chicago Convention, at ATT-11, which reproduces Standard 2.2.1 and Recommendation 2.2.2 of Annex 18. Recommendation 2.2.2 provides that each Contracting State should inform ICAO of difficulties encountered in the application of the Technical Instructions and of any amendments which it would be desirable to make to them.

[44]Technical Instructions for the Safe Transport of Dangerous Goods by Air, Doc 9284 AN/905 2007–2008 Edition (hereafter referred to as *the Instructions*). The Technical Instructions are quite specific and comprehensive. For a detailed discussion of *the Instructions* see Warner and Rooney (1997), pp. 23–24 and 29 at 23.

[45]Annex 18 to the Convention on International Civil Aviation (The Safe Transport of Dangerous Goods by Air), Second Edition—July 1989, Standard 5.2.1.

[46]*Id*. Standard 6.1.

[47]*Id*. Standard 8.1.a).

[48]*Id*. standard 8.1.b).

More specifically, the Annex has specific provisions concerning acceptance of radioactive materials, according to which there is a requirement presumably to be complied with by both the customs authorities and the carrier that packages and overpacks containing dangerous goods and freight containers containing radioactive materials shall not be loaded into a unit load device or an aircraft for carriage before they have been inspected for evidence of leakage or damage[49] It goes on to say that a unit load device shall not be loaded aboard an aircraft unless the device has been inspected and found free from any evidence of leakage from, or damage to, any dangerous goods contained therein.[50]

The Instructions are a critical contribution of ICAO to the subject of dangerous goods and safety in air transport. The provisions contained therein prescribe the detailed requirements applicable to the international civil transport of dangerous goods by air[51] The overarching principle of *the Instructions* is that any substance which, as presented for transport, is liable to explode, dangerously react, produce a flame or dangerous emission of heat or toxic, corrosive or flammable gases or vapours under conditions normally encountered in transport must not be carried in aircraft under any circumstances.[52]

Infectious substances, which come under Division 6.2 of *the Instructions*, are defined as substances which are known to contain, or are reasonably expected to contain pathogens.[53] Biological products are considered to be those products derived from living organisms which are manufactured and distributed in accordance with the requirements of the appropriate national authorities, which may have special licensing requirements, and are used either for prevention, treatment or diagnosis of disease in humans or animals, or for developmental or experimental or investigative purposes related thereto. They include, but are not limited to finished and unfinished products such as vaccines.[54]

General packing instructions relating to infectious substances are contained in Part 4 of Chapter 1 of *the Instructions* as well as in the Supplement to *the Instructions*[55] which, in Chapter 8 provide detailed instructions. *The Instructions*, which are considered the regulatory baseline for the carriage of dangerous goods, contain comprehensive and clear requirements; which, *inter alia* provide a structured classification of dangerous goods and list them systematically. The list identifies those goods which are: (a) forbidden under any circumstances; (b) forbidden on both passenger and cargo aircraft in normal circumstances but could be carried in exceptional circumstances subject to exemption by the States

[49] *Id.* Standard 8.4.1.

[50] *Id.* Standard 8.4.2.

[51] *Id.* 1.1.1. at p. 1-1-1.

[52] *Id.* 2.1 at p. 1-2-1. This excludes items such as aerosols, alcoholic beverages, perfumes, colognes safety matches and liquefied gas lighters carried on board by the operator for use or sale.

[53] *Id.* 6.3.1.1. at p. 2-6-5.

[54] *Id.* 6.3.1.2. at p. 2-6-5.

[55] Doc 9824, AN/905 SUPPLEMENT, 2007–2008 Edition.

concerned; (c) forbidden on passenger aircraft but permitted on cargo aircraft in normal circumstances; and (d) permitted on both passenger and cargo aircraft in normal circumstances. *The Instructions* require that all dangerous goods be packaged according to specifications provided and, in general, restrict the quantity per package according to the degree of hazard and the type of aircraft (i.e. passenger or cargo) to be used. There is generally no restriction on the number of packages per aircraft. They also identify and set out the packing methods to be used and the packaging permitted, together with the specifications for those packaging and the stringent testing process they must successfully complete before they are able to be used. Requirements for the markings and labels for packages and the documentation for consignments are also set out.

There is a requirement in *the Instructions* that every package of dangerous goods must be inspected externally by the operator before carriage in order to ensure it is in a fit state and appears to comply with all the relevant requirements. Packages are subject to loading restrictions including segregation of those containing incompatible dangerous goods and proper securement to prevent movement in flight. There is a further requirement that the captain of an aircraft must be informed of the nature of the dangerous goods that are on board and where they are located since in the event of an emergency on board (not necessarily involving dangerous goods) he/she, if the situation permits, must inform the appropriate air traffic services unit as to what is on the aircraft so as to assist the emergency services in their response. This provision allows the captain to exercise discretion in regard to conveying the information about dangerous goods since he/she must judge the risks involved in diverting his/her attention (or the co-pilot's attention) away from controlling the aircraft in emergency situations.

Operators are deemed aware of the nature and quantity of the dangerous goods that have been loaded on their aircraft; and in the event of an accident *the Instructions* require that they must, as soon as possible, inform the State in which the accident occurred of what was on board and where it was located. However, it is understood that, depending on the circumstances and place of an accident, this information may not be readily available. *The Instructions* also require that operators must report to the relevant authority accidents and incidents involving dangerous goods. For their part, States are required to have procedures in place to investigate such occurrences.

The Instructions also contain training requirements which apply to everyone involved in consigning, handling and carrying dangerous goods, cargo and passenger baggage. These include the need for refresher training at 2-year intervals and the keeping of training records. There are specific responsibilities for shippers and operators. Shippers must ensure that staff preparing consignments of dangerous goods receive training or that another organization with trained staff is used. Operators must ensure their own staff and those of their handling agents are trained. Training programmes for operators are subject to approval by the State of the operator.

Under the ICAO regime, there are also preventive and reactive provisions that States authorities have to follow. Measures to be taken are clearly defined and

prescribed in order to contain the spread of infectious disease. The pre-eminent legal provision which governs this issue is contained in the Chicago Convention[56]; Article 14 of which states:

> Each contracting State agrees to take effective measures to prevent the spread by means of air navigation of cholera, typhus (epidemic), smallpox, yellow fever, plague, and such other communicable diseases as the contracting States shall from time to time decide to designate, and to that end contracting States will keep in close consultation with the agencies concerned with international regulations relating to sanitary measures applicable to aircraft. Such consultation shall be without prejudice to the application of any existing international convention on this subject to which the contracting States may be parties.

This provision explicitly devolves primary responsibility on States to take effective measures to prevent airborne diseases in aircraft and implicitly requires States to issue guidelines for airlines, by liaising with the international agencies concerned. At the 12th Session of the ICAO Facilitation Division (Cairo, 22 March–1 April 2004), Contracting States invited ICAO to play the lead role in formulating regulatory policy with regard to curbing the spread of contagious diseases in airports and aircraft. There was general support by the Division that ICAO should also take the lead in developing guidance material in close cooperation with relevant bodies such as Airports Council International (ACI), The International Air Transport Association (IATA) and WHO.[57]

Work on the continuity of air operations concentrated on an ICAO contingency plan in preparation for a potential avian influenza pandemic, in cooperation with the World Health Organization and industry partners is already under way. The ultimate goal is the development of a globally harmonized pandemic disease risk management programme.

8.6 IATA Regulations

In consultation with ICAO, IATA publishes annually its *Dangerous Goods Regulations*[58] which provide procedures for the shipper and the air carrier under which dangerous goods can be carried by air. The IATA *Regulations* define dangerous

[56] *Supra,* note 1 in Chap. 1.

[57] FAL/12-WP/118 (22/4/04), Report of the Twelfth Session of the Facilitation Division, Cairo, Egypt, 22 March-1 April 2004 Paragraphs 6.1.6 and 6.1.7. It must also be noted that WHO has adopted various provisions with regard to quarantine measures. These measures have a long history, having been introduced during the tenth Century. WHO adopted International Health Regulations in 1951. The purpose of International Health Regulations is to prevent international spread of disease, and in the context of international travel, to do so with the minimum of inconvenience to the passenger. This requires international collaboration in the detection, reduction or elimination of the sources from which infection spreads rather than attempts to prevent the introduction of disease by legalistic barriers that over the years have proved to be ineffective. For an in-depth study of the spread of infectious diseases by air see generally, Abeyratne (2002), pp. 53–80.

[58] *Dangerous Goods Regulations* Effective 1 January to 31 December 2007 (produced in consultation with ICAO) 48th Edition.

goods as articles or substances which are capable of posing a risk to health, safety, property or the environment and which are shown in the list of dangerous goods in the IATA *Regulations*.[59] The genesis of the IATA Regulations are the *United Nations Model Regulations*[60] and the IATA *Regulations* are applicable to all airlines which are members or associate members of IATA; those who are party to the IATA Multilateral Interline Traffic Agreement—Cargo and all shippers and agents that offer consignments of dangerous gods to IATA member and associate member carriers and others to which the IATA *Regulations* apply.

The IATA *Regulations* have stringent security provisions which link to Annex 17 to the Chicago Convention and the ICAO *Security Manual for Safeguarding Civil Aviation against Acts of Unlawful Interference*.[61] Regulation 1.6.2 makes provision for security training, including security awareness training and recognition of security risks, methods to address and reduce such risks and action to be taken in the event of a security breach. Infectious substances are classified in Section 3 of the IATA *Regulations* under Class 6 (Division 6.2) and The IATA *Regulations* call for additional hazards posed by these substances to be identified.[62] Infectious substances are classified in categories A and B.[63] Category A lists infectious substances which are transported in a form that, when exposure to it occurs is capable of causing permanent disability,[64] life threatening or fatal disease in otherwise healthy humans or animals. The IATA *Regulations* carry indicative examples of these substances in Table 3.6.D.[65] In Category B are substances which are infectious but do not meet the criteria for inclusion in Category A. Exceptions to Category B are those which do not contain infectious substances or substances which are unlikely to cause disease in humans or animals.

Packing instructions for Class 6 (Toxic and Infectious Substances) call for inner packagings comprised of a watertight primary receptacle; a watertight secondary package and absorbent cotton wool (for non solid infectious substances) sufficient to absorb leakage between the primary and secondary packaging; an itemized list of substances; and a rigid outer package of adequate strength and capacity, weight and intended use. The smallest external dimension must not be less than 4 inches.[66] The IATA *Regulations* also specify numerous specific and additional requirements.[67]

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[59]*Id.* paragraph 1.0 (Definitions of Dangerous Goods). Regulation 3.0.1.1. also defines dangerous goods as those gods which meet the criteria of one or more of nine UN packing groups according to the provisions of Section 3 of *the Regulations*.

[60]See paragraph 1.1. (Basis of these Regulations).

[61]ICAO Doc 8973 (Restricted).

[62]*Id.* 3.10.5 (Infectious Substances).

[63]*Id.* 3.6.2.2.

[64]*Id.* 3.6.2.2.1.

[65]*Id.* p. 105.

[66]*Id.* 5.6 (Packaging Instructions Class 6) Packaging Instructions 602 at p. 433–434.

[67]*Id.* p. 434.

8.7 Some Other Regulations

In both a regional and national context, it would appear that States and groups of States have recognized the centrifugal significance of the international regulations contained in the ICAO and IATA Regulations as having primacy. Consistent with this philosophy, the United States Department of Transportation (DoT) published its Final Rule for harmonization of infectious substances shipping rules with international regulation which became effective on 1 October 2006. Under this harmonization the Categories A and B defining infectious substances are similar to those identified in the listings in both the ICAO and IATA Regulations. In Category A, the Packing, marking and labelling is required to be as per IATA Packing Instruction 602 and UN Instruction 2900. As for specifications on packaging, marking and labelling in Category B, they are brought in harmony with IATA Packaging Instruction 650 and UN instruction 3373.[68]

Interest in the transport of dangerous in the European Union was sparked by a debate in the European Parliament in 1984.[69] The outcome of the debate is well reflected in the view of the European Commission which followed, that while accidents involving vehicles carrying dangerous gods can have potentially disastrous consequences, it would be counterproductive to duplicate the vastly complex work already being carried out by international organizations.[70] A Study, released in April 2005 suggested that there should be better coordination within the European Commission concerning dangerous goods regulations. This Study makes mention of ICAO and IATA Dangerous Goods Regulations and implicitly recognizes their primacy and applicability in the EU context.[71] This notwithstanding, The European Commission has, since 11 September 2001, launched a comprehensive anti bio-terrorism programme. the Commission has promoted discussions on preparedness for bioterrorist threats. Health ministers have met several times to discuss EU-wide co-ordination of efforts. Each Member State has appointed a senior representative to discuss these measures. The EU already has a communicable disease network, including a rapid alert system for any outbreak of infectious diseases.

Canada recognizes that the transportation of infectious substances internationally is regulated by ICAO and that as the majority of carriers, both in respect to passengers and cargo, are linked by nationality to States which are members of ICAO, anyone shipping infectious substances by air internationally are subject to the ICAO *Regulations*.[72] The *Human Pathogens Importation Regulations*

[68] Http://hazmat.dot.gov/regs/rules/final/71fr/docs/71fr-32243.pdf.

[69] See Evaluation of EU Policy on the Transport of Dangerous Goods since 1994, TREN/E3/43-2003, Final Report, Section 1 Policy Overview (30 April 2005), at p. 12.

[70] *Ibid.*

[71] *Id.* p. 77.

[72] Public Health Agency of Canada, Laboratory Bio-safety Guidelines, Chapter 10, Regulatory Aspects for Handling Infectious Substances, Paragraph 10.3.

(SOR/94-558) (HPIR) are the regulatory authority for facilities wishing to import human pathogens into and transfer specimens within Canada. These regulations were developed to ensure that facilities have appropriate containment for the pathogens they wish to handle. Any facility wishing to import a human pathogen requiring containment levels 2, 3 or 4 must have a valid Health Canada permit before importation. Pathogens requiring containment level 1 facilities are not regulated by the HPIR, and therefore a permit is not required for their importation.

Whatever be the ultimate recommendation of the Legal Committee of ICAO on this subject, there are a few incontrovertible truths that drive the issue of the illegal carriage of infectious pathogens by air. The first is that, as recognized by WHO and demonstrated by IATA (which publishes its highly effective and widely accepted *Regulations* in consultation with ICAO), the lead role in legislative and regulatory control of the issue lies well within ICAO. The second is that, one has to go back to the basics of the rule book and start with the Preamble to the Chicago Convention. The Preamble unequivocally links the future development of aviation to "general security" which essentially means that aviation should not only be concerned with persons and property directly involved with air transport but also with the rest of the world that might be adversely affected by the release of infectious pathogens through aviation.

The third home truth is that it is a pre-eminent responsibility of States to ensure security at laboratories in their territories as the illegal carriage of infectious substances by air is liked to the initial leakage from a laboratory. Therefore it is extremely important for States to strictly enforce their dangerous goods legislation. It is also important to treat this subject holistically in terms of the world at large and not restrictively by singling out only those involved in the flight concerned. Finally, States have to adopt a security culture that admits of an overall approach to the threat as a potential harm to the health of humanity. This should inevitably include strict adherence by States to the provisions of Annexes 17 and 18 and inclusion of new Standards in the Annexes as necessary, together with an abiding understanding that the illegal carriage of infectious pathogens by air portends a threat both to safety and security of aviation.

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