# Nebraska Public Health Laboratory Newsletter

A publication of the Nebraska Public Health Laboratory (NPHL) at the University of Nebraska Medical Center
Fall 1999

We believe sharing information is one of the best ways to deal with the many challenges facing the clinical laboratory. In this issue of the NPHL newsletter, Peter Iwen discusses approaches to dealing with the shipment of potentially infectious material. The regulations are complex and involve the participation of numerous government agencies, including the Federal Aviation Administration and the Department of Transportation. Laboratories must do their best to conform to the guidelines but several of the key issues are subject to interpretation. By sharing this information, we hope to hear from other laboratories about any difference in opinion or approach to complying with these important regulations. Since we all travel by car and/or plane sometime during the year, we recognize the problems that could be created by inadvertent exposure to infectious organisms being shipped. Additionally, it should be no surprise that the public may also be placed at risk of infection through exposure to biological materials as a result of intentional acts by terrorists and criminals. Recently a national effort has been initiated to prepare for these threats. The NPHL is working with the Nebraska Department of Health and Human Services and CDC to provide diagnostic services and consultation regarding potential exposure of the public by infectious organisms. More information will be made available to Nebraska laboratories in the coming months. Finally, while we make preparations for the future, we must still be ready for the age old infections as evidenced by the recent outbreak of rubella in Douglas County and as noted in the article by Carol Allensworth of the Douglas County Health Department. We wish for you all a healthy beginning of a new century.

Steven H. Hinrichs, M.D.

## Transportation Of Dangerous Goods

by Peter C. Iwen, M.S.

Dangerous goods, also referred to as hazardous materials, are defined as materials moving in commerce that may pose unreasonable risks to health and safety. Each year the transportation of dangerous goods increases in complexity due in part to the introduction of several new chemicals into commerce, public interest and pressure for more stringent controls, and governmental legislation which has promoted an increase in regulatory enforcement by both Federal and

State agencies. The main regulatory an enforcement agency involved with the transportation of these materials is the Department of Transportation (DOT), who has the responsibility to identify and to promulgate regulations for the safe transportation of hazardous materials. and to promulgate regulations for the safe transportation of hazardous materials. Additionally, other government agencies such as the Environmental Protection Agency (EPA) and the Federal Aviation Administration (FAA), have also developed controls for the proper management and transportation of hazardous materials. The DOT regulations are compiled piled in a document called "Hazardous Materials Regulations of the DOT" also referred to as "49 CFR". These regulations include recommendations concerning enforcement, materials classification, the Hazardous Materials (HAZMAT) Table, as well as instructions for handling, labeling, packaging, documentation, and shipping of dangerous goods.

Along with the DOT regulations, the airlines have also developed additional restrictions specific for air transportation. The International Air Transport Association (IATA) compiled the "IATA Dangerous Goods

Regulations, 40th Edition " based on

## Rubella Outbreak in Douglas County, Nebraska

By Carol Allensworth, MT(ASCP), SM
Douglas County Health Department

A total of 82 confirmed cases of rubella have been reported in the Omaha area since April 1, 1999. The outbreak peaked during May and the first week of June, although cases continued to be reported throughout the month of July and into early August. A rubella outbreak is considered to be concluded only when six weeks have passed since rash onset in the last reported case.

Fifty-four of the 82 confirmed cases were either employees or close contacts of employees in the meat packing industry. An additional 15 of the confirmed cases were associated with outbreaks of rubella in two child care centers. Of the remaining cases, 8 had a known exposure to a confirmed case of rubella, and 5 cases were closely tied to the Hispanic community where rubella was know to be circulating.

Four of the confirmed cases were pregnant at the time of infection, two in the first trimester, one in the second trimester, and one in the third trimester.

The outbreak has primarily affected two groups, unvaccinated individuals of Hispanic origin and infants. The highest concentration of rubella cases ( occurred among individuals of Hispanic ethnicity, many of whom were born in countries either without national rubella vaccination programs or where such programs were introduced only recently. The demographic characteristics of this group are similar to those seen in other outbreaks of rubella in the US. The age of the affected individuals is shown in the chart on page 1. The high percentage of individuals in child bearing years, is of concern and the issue of pregnancy and infection of the fetus was investigated. At this time, the Health Department is heightening surveillance activities to identify any cases of congenital rubella syndrome (CRS) which may have

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When submitting potentially infectious substances for transportation, it first must be categorized into one of four risk groups based on criteria developed and published in the "World Health Organization Laboratory Biosafety Manual". A risk group is characterized by the pathogenicity of the organism, the mode and relative ease of transmission, the degree of risk to both an individual and a community, and the reversibility of the disease through the availability of known and effective preventative agents and treatment. The criteria for each risk group according to the level of risk are shown in Table 2. For example, diagnostic specimens believed to not contain pathogens in Risk Group 2, 3, or 4 are classified in Risk Group 1 and are considered "not restricted medical materials". These specimens are exempt from the marking, labeling, and documentation requirements of the IATA Regulations. Diagnostic specimens known or reasonably expected to contain pathogens in Risk Group 2, 3, or 4 are handled as "Infectious substance, affecting humans (liquid or solid)" and therefore require special handling. Requirements for air shipment of these

**Table 1.** Hazard classes

**Class 1 - Explosives**
- Division 1.1- Articles and substances having a mass explosion hazard.
- Division 1.2- Articles and substances having a projection hazard but not a mass explosion hazard.
- Division 1.3- Articles and substances having a fire hazard, a minor blast hazard and/or a minor projection hazard but not a mass explosion hazard.
- Division 1.4- Articles and substances having a mass explosion hazard.
- Division 1.5- Very insensitive substances having a mass explosion hazard.
- Division 1.6- Extremely insensitive articles which do not have a mass explosion hazard.

**Class 2 - Gases**
- Division 2.1 - Flammable gas.
- Division 2.2 - Non-flammable, non-toxic gas.
- Division 2.3 - Toxic gas.

**Class 3 - Flammable Liquids**

**Class 4 - Flammable Solids; Substances Liable to Spontaneous Combustion; Substances Which, in Contact with Water, Emit Flammable Gases**
- Division 4.1 - Flammable solid.
- Division 4.2 - Substances liable to spontaneous combustion.
- Division 4.3 - Substances which, in contact with water, emit flammable gases.

**Class 5 - Oxidizing Substances and Organic Peroxide**
- Division 5.1 - Oxidizer
- Division 5.2 - Organic peroxides.

**Class 6 - Toxic and Infectious Substances**
- Division 6.1 - Toxic substances.
- Division 6.2 - Infectious substances.

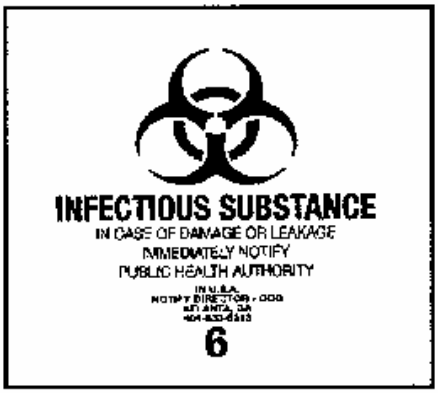
**Class 7 - Radioactive Material**

**Class 8 - Corrosives**

**Class 9 - Miscellaneous Dangerous Goods**

(IATA Dangerous Goods Regulations, 40th Edition; Section 3 - Classification, page 53)

dangerous goods can be found in the IATA Regulations "Table of Dangerous Goods", which includes the proper packaging, labeling and marking, and paperwork required for transport. Along with the Air Waybill of the carrier, a Shipper's Declaration must also be included with the shipment or these materials. It is vitally important that the regulations be followed closely. Additionally, it is also important that an individual trained and certified in the transport of dangerous goods be involved in the application of the regulations. IATA Regulations require that people submitting dangerous goods for transportation undergo specific training (recurrent training must occur every 24 months) to ensure that knowledge of the regulations in the transport of dangerous goods is current. See Table 3 for a general outline of the steps to follow when shipping infectious substances and diagnostic specimens. The handling of dry ice (solid carbon dioxide), whether used to transport a dangerous good or not also requires special handling. Dry ice when used for transport by air, must be in packaging designed and constructed to permit the release of $CO_2$ gas and to prevent buildup of pressure that could rupture the package. Packaging containing dry ice must include a "Miscellaneous Class" label (Class 9) showing the weight of the dry ice on the outside of the container. A Shippers Declaration is required only when the dry ice is used as a refrigerant of a dangerous good that requires such a document. When a Shipper's Declaration is not required, the "Nature and Quantity of Goods " box on the Air Waybill must show in "Special Handling" the proper shipping name (dry ice), the class number (Class 9), the UN number (UN 1845), and the quantity of dry ice in kilograms. Individuals at the NPHL have been trained and certified in the proper handling and shipment of dangerous goods. Laboratories considering submitting of diagnostic specimens/isolates to the Center's for Disease Control and Prevention, should first contact personnel at the NPHL. Generally, these items should first be sent to the NPHL so proper documentation can be prepared prior to shipment to the CDC. Questions concerning the shipment of dangerous goods can be directed to Kathy Talmon or Tony Sambol at (402) 559-7737 or Peter Iwen at (402) 559-7774.



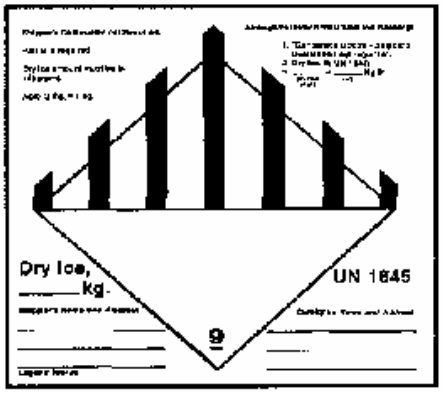




**Table 2.**
**Infectious substance assignment of risk groups.**

**Risk Group 1 - No or very low individual or community risk**
Includes microorganisms that are unlikely to cause human or animal disease or substances containing only such microorganisms.

**Risk Group 2 - Moderate individual risk and low community risk**
A specimen containing a pathogen that can cause human or animal disease, but is unlikely to be a serious hazard, and while capable of causing serious infection on exposure, for which there are effective treatment and preventative measures available and the risk of spread of infection is limited.

**Risk Group 3 - High individual and low community risk**
A specimen containing a pathogen that usually causes serious human or animal disease, but does not ordinarily spread from one infected individual to another, and for which effective treatment and preventative measures are available.

**Risk Group 4 - High individual and community risk**
A specimen containing a pathogen that usually causes serious human or animal disease and that can be readily transmitted from one individual to another, directly or indirectly, and for which effective treatment and preventative measures are not usually available.

(IATA Dangerous Goods Regulations, 40th Edition; Section 3.6.2, pages 79-80)

**Table 3. Steps to follow for the shipment of infectious substances and diagnostic specimens.**

1. Categorize the specimen into one of four risk groups. If categorized into Risk Group 2,3, or 4, progress to Step 2.

2. Follow the packing requirements which includes:
   a. proper inner package
   b. proper outer package
   (Refer to Packing Instructions 602, page 379 of IATA Regulations.)

3. Use proper labeling and marking of the package, which includes on the outside of the container the:
   a. name, address, and telephone number of shipper,
   b. name, address, and telephone number of recipient,
   c. "Class 6-Infectious Substance (Division 6.2)" hazard label (also a "Class 9-Miscellaneous Dangerous Goods" label if containing dry ice),
   d. statement "Infectious substance, affecting humans" along with the proper name of the microorganism (species) or the type of infection noted, and
   e. United Nations Classification Number (UN 2814)

4. Include the following paper work:
   a. Air Waybill of the carrier and
   b. Shipper's Declaration for Dangerous Goods
   (It is imperative that these forms be properly filled out by an individual who has been certified in the transportation of dangerous goods. Refer to the IATA Regulations.)

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*(Continued from page 1)* *Rubella Outbreak*

occurred as a result of the outbreak. In addition, Douglas County experienced outbreaks of rubella among unvaccinated infants and their parents in two northwest Omaha child care centers. The infants ranged in age from five months of age to seventeen months of age, and four of the infants had been eligible for vaccination at the time of infection. This outbreak demonstrated the importance of the national vaccination program and the need for continued surveillance.


The Nebraska Public Health Laboratory Newsletter is a publication of the Department of Pathology and Microbiology, Samuel M. Cohen, M.D., Ph.D., Professor and Chairman, at the University of Nebraska Medical Center. The views expressed here do not necessarily reflect the opinions of the Nebraska Department of Health and Human Services.



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