NIH GUIDE for GRANTS and CONTRACTS

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Vol. 4, No. 1, February 10, 1975

TRANSPORTATION OF HAZARDOUS MATERIALS

ANNOUNCEMENT

The National Institutes of Health requires all grantees and contractors to comply with regulations concerning the transportation of hazardous materials. Responsibility rests with both the investigators and their institutions. The NIH will investigate any allegations of violations related to any NIH-supported activities, whether intramural or extramural. Substantial evidence of abuse of good practice will result in the NIH's taking appropriate measures against the violators.

In recent years airline pilots have become increasingly concerned about the shipment of hazardous materials, such as radioactive substances and etiological agents of disease, on passenger aircraft. Through the Airline Pilots Association (ALPA) they worked for passage of legislation which would proscribe shipment of such materials on passenger aircraft. Because of the many serious difficulties and problems which would result if legislation restricted to cargo carriers only, materials used for biomedical research, diagnosis, and treatment, the biomedical community argued against such provisions in the proposed bill.

On January 4, 1975, President Ford signed into law PL 93-633, the Transportation Safety Act of 1974. The new law does not restrict, to any marked degree, the transportation of hazardous materials on passenger-carrying aircraft. However, it does provide for the development of tighter regulations governing the packaging of hazardous materials for shipment on aircraft.

ALPA alleges that present packaging regulations, which they believe are adequate, are not being enforced properly. Precisely because the biomedical community argued against restrictive provisions in the bill - and the new act reflects the concerns stated by the scientific community - it is a moral as well as a legal requirement that this community abide by current regulations and assume responsibility for careful and assiduous attention to them.

The GUIDE is published at irregular intervals to provide policy and administrative information to individuals and organizations who need to be kept informed of requirements and changes in grants and contracts activities administered by the National Institutes of Health.

Supplements, printed on yellow paper, are published by the respective awarding units concerning new projects, solicitations of sources, and requests for proposals.

ALPA, after considerable deliberation, has announced that members will refuse to transport hazardous materials aboard passenger-carrying aircraft after February 1, 1975. Air transport of hazardous materials, including etiologic agents, would be restricted to cargo-only flights if the proposed ban becomes effective. The Center for Disease Control (CDC) has asked the ALPA to continue to accept and transport diagnostic specimens and less than 50 ml. quantities of etiologic agents. The ALPA had earlier relaxed their position regarding radioactive materials when they agreed to exclude radio-pharmaceuticals from the proposed ban.

The Association's concern over the transport of hazardous materials is not without basis. In the past, improper packaging, in violation of existing Federal regulations, has resulted in exposure of transportation personnel and the environment to etiologic agents such as polio virus, serum known to contain Australia antigen, and influenza virus. In other instances, inadequate packaging has required investigation and inspection to determine the extent of damage or leakage, evaluation of potential or real exposures of personnel and environment to infectious materials, and of the need to institute decontamination procedures.

Although no infections have ever been traced to etiologic agents in commerce, incidents involving etiologic agents and other hazardous materials become well publicized within the transportation industry, often with little distinction made between low-risk and high-risk occurrences. One approach to the problems posed by various hazardous materials is to prohibit their shipment on passenger-carrying aircraft. A reasonable alternative to this approach is uniform compliance to the realistic and effective containment packaging and labeling requirements for etiologic agents contained in the Interstate Quarantine regulations (See Attachment, 42 CFR, Section 72.25). Such compliance is the most direct way of providing assurance to the transportation industry that the risk of transporting etiologic agents is reduced to an absolute minimum. It should be noted that compliance with the cited requirements is mandatory and that failure to comply with applicable requirements subjects violators to punishment by fine or imprisonment, or both, as provided in Section 368(a) of the Public Health Service Act [42 U.S.C. 271(a)].

Similar regulations that pertain to packaging of etiological agents and radioactive materials associated with biomedical research and medical practice are contained in Title 49 of the Code of Federal Regulations, Parts 172 through 178. Your institution may wish to obtain a copy of the pertinent volume. The Government Printing Office offers the book for sale at a cost of $5.60. Send your order to the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Ask for the Code of Federal Regulations 49, Transportation, Parts 100 to 199, revised October 1, 1973.

The Center for Disease Control has asked the NIH to alert its grantees and contractors regarding the Interstate Quarantine regulations of these materials. Relevant portions of 42 CFR, Section 72.25 appear in the attachment.

If you have questions concerning packaging, labeling, or shipment of etiologic agents, inquiries should be directed to:

Center for Disease Control
Attention: Office of Biosafety
Atlanta, Georgia 30333

Telephone: 404-633-3311, Ext. 3883

Shipments of hazardous materials, within the U.S.A. and through importation and exportation, are subject to a variety of regulations involving five different regulatory agencies:

Public Health Service, Title 42, Chapter I
Department of Transportation, Title 49, Subtitle B, Chapter I
Department of Agriculture, Title 7, Chapter III
Department of Commerce, Title 15, Chapter I
Atomic Energy Commission, Title 10, Chapter I

While these regulations are extensive and complicated, their purpose is the assurance of biologic safety and good practice. The NIH will keep the biomedical research community informed of the requirements of the rules.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION

CENTER FOR DISEASE CONTROL
ATLANTA, GEORGIA 30333

TELEPHONE: (404) 633-3311

Shippers of etiologic agents should be familiar with the regulation that governs packaging, labeling, and shipment of these products in interstate commerce. The following revision of Part 72, Subpart C, became effective July 30, 1972. Questions regarding this regulation should be sent to the Biohazards Control Officer

Center for Disease Control
1600 Clifton Road
Atlanta, Georgia 30333
Telephone 404-633-3311 Extension 3883

TITLE 42—PUBLIC HEALTH

Chapter I—Public Health Service, Department of Health, Education, and Welfare

SUBCHAPTER F—QUARANTINE, INSPECTION, LICENSING

PART 72—INTERSTATE QUARANTINE

Subpart C—Shipment of Certain Things

ETIOLOGIC AGENTS

A notice was published in the FEDERAL REGISTER on May 13, 1971, 36 F.R. 8815, proposing the amendment of § 72.25 of Part 72, Title 42, Code of Federal Regulations, relating to packaging and other requirements applicable to the transportation of etiologic agents. The proposal was to identify requirements in terms of causative agents instead of in terms of the diseases themselves, to simplify and to strengthen the requirements, particularly with respect to shipments in volumes of 50 ml. or more, and to limit the total volume of material that may be shipped within a single outer container to 4,000 ml. (approximately 1 gallon). A period of 30 days was prescribed for submittal of comments, suggestions, and objections. Upon further review, the proposal has been revised. Minimum packaging requirements are made applicable also to biological products, the requirements for use of registered mail are limited to 11 groups of agents, U.S. liquid measurements are replaced entirely by metric measurements, and the label has been redesigned in coordination with the Department of Transportation.

After consideration of all material received, the following amendment is hereby adopted to be effective 30 days after publication in the FEDERAL REGISTER.

Dated: June 6, 1972.

VERNON E. WILSON, M.D.
Administrator, Health Services and Mental Health Administration.

Approved: June 25, 1972.

ELLIOT L. RICHARDSON,
Secretary.

Section 72.25 of Part 72, Title 42, Code of Federal Regulations is amended to read as follows:

§ 72.25 Etiologic agents[1]

(a) *Definitions.* As used in this section:

(1) An "etiologic agent" means a viable microorganism or its toxin which causes or may cause, human disease.

(2) A "diagnostic specimen" means any human or animal material including, but not limited to, excreta, secreta, blood and its components, tissue, and tissue fluids being shipped for purposes of diagnosis.

(3) A "biological product" means a biological product prepared and manufactured in accordance with the provisions of 9 CFR Part 10, Licensed Veterinary Biological Products, 42 CFR Part 73, Licensed Human Biological Products, 21 CFR 130.3, *New drugs for investigational use in humans,* 9CFR Part 103, Biological Products for Experimental Treatment of Animals, or 21 CFR 130.3(a), *New drugs for investigational use in animals,* and which, in accordance with such provisions, may be shipped in interstate traffic.

(b) *Transportation; etiologic agent minimum packaging requirements.* No person may knowingly transport or cause to be transported in interstate traffic, directly or indirectly, any material, including but not limited to, diagnostic specimens and biological products, containing, or reasonably believed by such person to contain, an etiologic agent unless such material is packaged to withstand leakage of contents, shocks, pressure changes, and other conditions incident to ordinary handling in transportation.

(c) *Transportation; etiologic agents subject to additional requirements.* No person may knowingly transport or cause to be transported in interstate traffic, directly or indirectly, any material, other than diagnostic specimens and biological products, containing, or reasonably believed by such person to contain, one or more of the following etiologic agents unless such material is packaged in accordance with the requirements specified in paragraph (b) of this section, and unless, in addition, such material is packaged and shipped in accordance with the requirements specified in subparagraphs (1)–(6) of this paragraph:

BACTERIAL AGENTS

Actinobacillus–all species.
Arizona hinshawii–all serotypes.
Bacillus anthracis.
Bartonella–all species.
Bordetella–all species.
Borrelia recurrentis, B. vincenti.
Brucella–all species.
Clostridium botulinum, Cl. chauvoei, Cl. haemolyticum, Cl. histolyticum, Cl. novyi, Cl. septicum, Cl. tetani.
Corynebacterium diphtheriae C, equi, C. haemolyticum, C. pseudotuberculosis, C. pyogenes, C. renale.
Diplococcus (Streptococcus) pneumoniae.
Erysipelothrix insidiosa.
Escherichia coli, all enteropathogenic serotypes.
Francisella (Pasteurella) tularensis.
Haemophilus ducreyi, H. influenzae.
Herellea vaginicola.
Klebsiella–all species and all serotypes.
Leptospira interrogans–all serotypes.
Listeria–all species.
Mima polymorpha.
Moraxella–all species.
Mycobacterium–all species.
Mycoplasma–all species.
Neisseria gonorrhoeae, N. meningitidis.
Pasteurella–all species.
Pseudomonas pseudomallei.
Salmonella–all species and all serotypes.
Shigella–all species and all serotypes.
Sphaerophorus necrophorus.
Staphlyococcus aureus.
Streptobacillus moniliformis.

[1]The requirements of this section are in addition to and not in lieu of any other packaging or other requirements for the transportation of etiologic agents in interstate traffic prescribed by the Department of Transportation and other agencies of the Federal Government.

Streptococcus pyogenes.
Treponema careteum, T. pallidum, and *T. pertenue.*
Vibrio fetus, V. comma, including biotype El Tor, and *V. parahemolyticus.*
Yersenia (Pasteurella) pestis.

FUNGAL AGENTS

Actinomycetes (including *Nocardia species, Actinomyces* species and *Arachnia propionica).*
Blastomyces dermatitidis.
Coccidioides immitis.
Cyrptococcus neoformans.
Histoplasma capsulatum.
Paracoccidioides brasiliensis.

VIRAL, RICKETTSIAL, AND CHLAMYDIAL AGENTS

Adenoviruses–human–all types.
Arboviruses.
Coxiella burnetii.
Coxsackie A and B viruses–all types.
Cytomegaloviruses.
Dengue virus.
Echoviruses–all types.
Encephalomyocarditis Virus.
Hemorrhagic fever agents, including *Crimean hemorrhagic fever (Congo), Junin,* and *Machupo viruses,* and others as yet undefined.
Hepatitis-associated antigen.
Herpesvirus all members.
Infectious bronchitis-like virus.
Influenza viruses–all types.
Lassa virus.
Lymphocytic choriomeningitis virus.
Marburg virus.
Measles virus.
Mumps virus.
Parainfluenza viruses–all types.
Polioviruses–all types
Poxviruses–all members.
Psittacosis – Ornithosis – Trachoma – Lymphogranuloma groups of agents.
Rabies virus–all strains.
Reoviruses–all types.
Respiratory syncytial virus.
Rhinoviruses–all types.
Rickettsia–all species.
Rubella virus.
Simian viruses–all types.
Tick-borne encephalitis virus complex, including *Russian spring-summer encephalitis, Kyasanur forest disease, Omsk hemorrhagic fever,* and *Central European encephalitis viruses.*
Vaccinia virus.
Varicella virus.
Variola major and Variola minor viruses.
Vesicular stomatis virus.
Yellow fever virus.

(1) *Volume less than 50 ml.* Material shall be placed in a securely closed, watertight container (primary container (test tube, vial, etc.)) which shall be enclosed in a second, durable watertight container (secondary container). Several primary containers may be enclosed in a single secondary container, if the total volume of all the primary containers so enclosed does not exceed 50 ml. The space at the top, bottom, and sides between the primary and secondary containers shall contain sufficient nonparticulate absorbent material to absorb the entire contents of the primary container(s) in case of breakage or leakage. Each set of primary and secondary containers shall then be enclosed in an outer shipping container constructed of corrugated fiberboard, cardboard, wood, or other material of equivalent strength.

(2) *Volume 50 ml. or greater.* Packaging of material in volumes of 50 ml. or more shall include, in addition, a shock absorbent material, in volume at least equal to that of the absorbent material between the primary and secondary containers, at the top, bottom, and sides between the secondary container and the outer shipping container. Single primary containers shall not contain more than 500 ml. of material. However, two or more primary containers whose combined volumes do not exceed 500 ml. may be placed in a single, secondary container. Not more than eight secondary shipping containers may be enclosed in a single outer shipping container. (The maximum amount of etiologic agent which may be enclosed within a single outer shipping container shall not exceed 4,000 ml.)

(3) *Dry Ice.* If dry ice is used as a refrigerant, it must be placed outside the secondary container(s). If dry ice is used between the secondary container and the outer shipping container, the shock absorbent material shall be so placed that the secondary container does not become loose inside the outer shipping container as the dry ice sublimates.

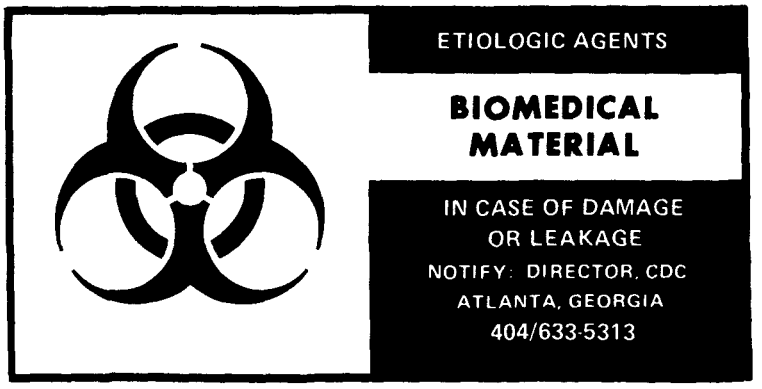
(4) *Labels.* The label for Etiologic Agents/Biomedical Material, except for size and color, must be as shown:

(1) The color of material on which the label is printed must be white and the symbol and printing in red.

(ii) The label must be a rectangle measuring 51 mm. (2 inches) high by 102.5 mm. (4 inches) long.

(iii) The red symbol measuring 38 mm. (1½ inches) in diameter must be centered in a white square measuring 51 mm. (2 inches) on each side.

(iv) Type size of the letters of label shall be as follows:



ETIOLOGIC AGENT	10 pt. rev.
BIOMEDICAL MATERIAL	14 pt.
IN CASE OF DAMAGE OR LEAKAGE	10 pt. rev.
NOTIFY DIRECTOR CDC, ATLANTA, GA.	8 pt. rev.
404 633 5313	10 pt. rev.

(5) *Damaged packages.* Carriers shall promptly, upon discovery of damage to the package that indicates damage to the primary container, isolate the package and notify the Director, Center for Disease Control, 1600 Clifton Road, N.E., Atlanta, Ga. 30333 (telephone (404) 633-5313), and the sender.

(6) *Registered mail or equivalent system.* Transportation of the following etiologic agents shall be by registered mail or an equivalent system which requires or provides for sending notification to the shipper immediatley upon delivery:

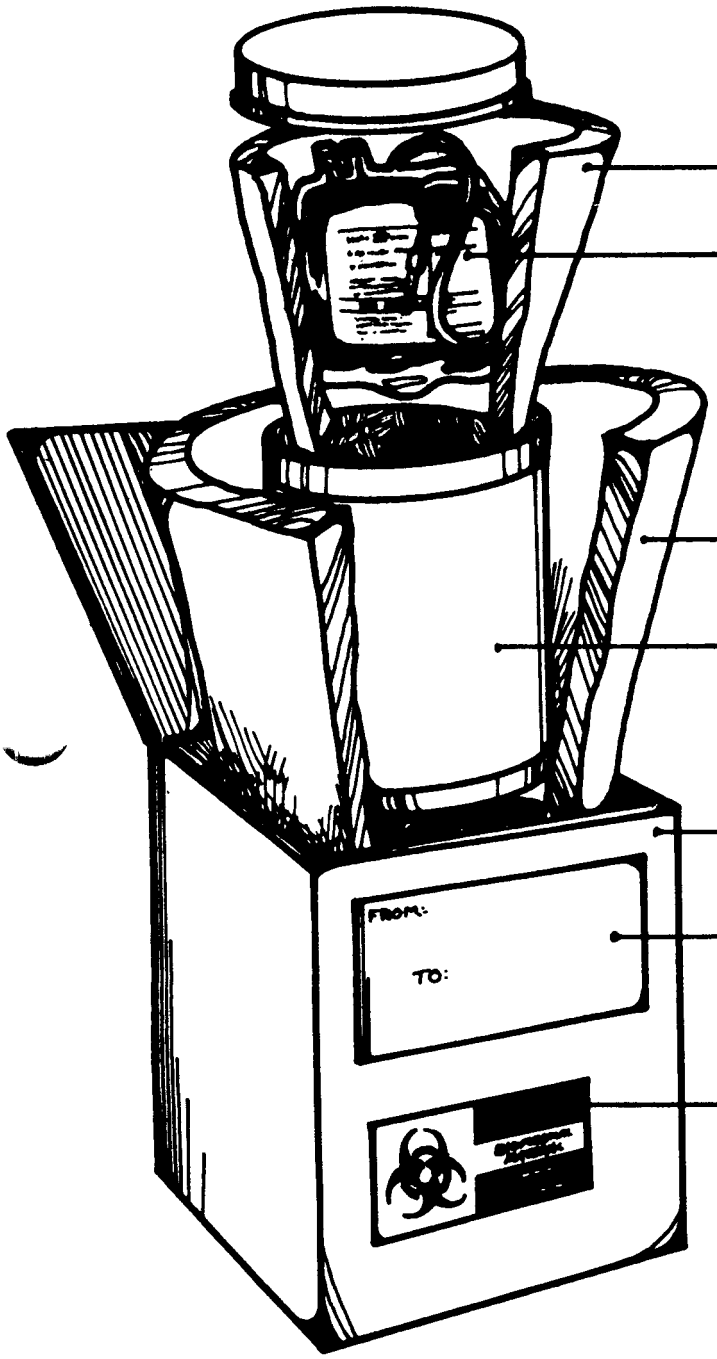
Actinobacillus mallei.
Coccidioides immitis.
Francisella (Pasteurella) tularensis.
Hemorrhagic fever agents, including, but not limited to, *Crimean hemorrhagic fever (Congo). Junin, Machupo viruses.*
Herpesvirus simiae (B virus).
Histoplasma capsulatum.
Lassa virus.
Marburg virus.
Pseudomonas pseudomallei.
Tick-borne encephalitis virus complex, including, but not limited to, *Russian spring-summer encephalitis, Kyasanur forest disease, Omsk hemorrhagic fever,* and *Central European encephalitis viruses, Variola minor* and *Variola major.*
Yersenia (Pasteurella) pestis.

(d) *Notice of delivery; failure to receive.* When notice of delivery of agents containing, or suspected of containing, etiologic agents listed in paragraph (c) (6) of this section is not received by the sender within 5 days following anticipated delivery of the package, the shipper shall notify the Director, Center for Disease Control, 1600 Clifton Road, N.E., Atlanta, Ga. 30333 (telephone (404) 633-5313.

(e) *Requirements; variations.* The Administrator may approve variations from the requirements of this section if, upon review and evaluation, he finds that such variations provide protection at least equivalent to that provided by compliance with the requirements specified in this section and makes such findings a matter of official record.

(Sec. 361. 58 Stat. 703; 42 U.S.C. 264)

PACKAGING AND LABELING OF ETIOLOGIC AGENTS



ABSORBENT PACKING MATERIAL

PRIMARY CONTAINER *(Bottle, blood bag, etc.)**

*NOTE: Single primary containers may not exceed 500 ml. of material. Two or more primary containers whose combined volumes do not exceed 500 ml. may be enclosed in a single, secondary container. The maximum volume of etiologic agent which may be enclosed in a single outer shipping container shall not exceed 4000 ml.

SHOCK ABSORBENT MATERIAL

SECONDARY CONTAINER *(Gasketed screwcap with waterproof tape or hermetically sealed can)*

OUTER SHIPPING CONTAINER

MAILING LABEL

ETIOLOGIC AGENT LABEL

The Interstate Quarantine Regulations (42 CFR, Part 72.25, Etiologic Agents) was revised July 31, 1972, to provide for packaging and labeling requirements for etiologic agents and certain other materials shipped in interstate traffic. The illustration shows acceptable packaging and labeling of etiologic agents in accordance with subparagraphs (c) (2) and (4) of the cited regulation.

For further information on any provision of this regulation contact:

Center for Disease Control
Attn: Biohazards Control Office
1600 Clifton Road
Atlanta, Georgia 30333

Telephone: 404-633-3311

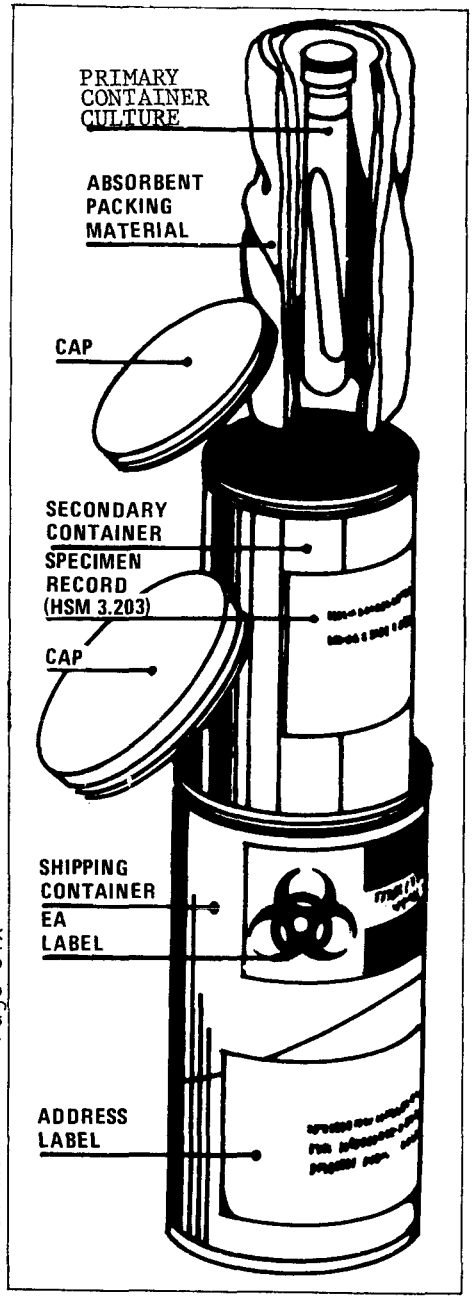
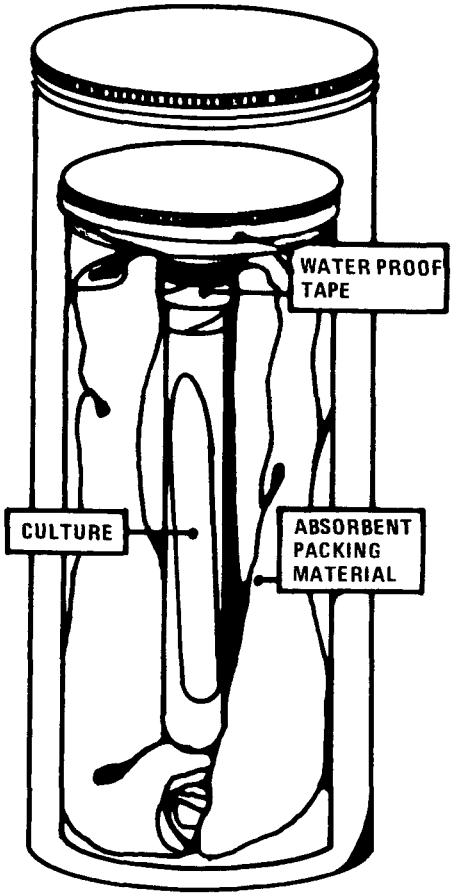


FIGURE 1

PACKAGING AND LABELING OF ETIOLOGIC AGENTS

FIGURE 2



X

CROSS SECTION OF PROPER PACKING

The Interstate Quarantine Regulations (42 CFR, Part 72.25 Etiologic Agents) was revised July 31, 1972 to provide for packaging and labeling requirements for etiologic agents and certain other materials shipped in interstate traffic.

Figures 1 and 2 diagram the packaging and labeling of etiologic agents in volumes of less than 50 ml. in accordance with the provisions of subparagraph (C) (1) of the cited regulation. Figure 3 illustrates the color and size of the label, described in subparagraph (C) (4) of the regulations, which shall be affixed to all shipments of etiologic agents.

For further information on any provision of this regulation contact:

Center for Disease Control
Attn: Biohazards Control Office
1600 Clifton Road
Atlanta, Georgia 30333
Telephone: 404 – 633-3311

FIGURE 3 (RED LABEL)

ETIOLOGIC AGENTS

BIOMEDICAL MATERIAL

IN CASE OF DAMAGE OR LEAKAGE
NOTIFY: DIRECTOR, CDC
ATLANTA, GEORGIA
404/633-5313

☆ U. S. GOVERNMENT PRINTING OFFICE : 1975 584-256/3104

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
PUBLIC HEALTH SERVICE
NATIONAL INSTITUTES OF HEALTH

TO : See Below

DATE: February 5, 1975

FROM : Acting Director, NIH

SUBJECT : Attached Announcement on the Transportation of Hazardous Materials

NIH-supported grantees and contractors will shortly receive the attached announcement. Compliance with regulations regarding marking, packaging and shipment of hazardous materials is mandatory and it is expected that NIH intramural scientists will exercise extra caution to ensure that they do not violate any of these regulations. Reports of any carelessness on the part of NIH personnel can seriously compromise NIH's ability to take appropriate measures when extramural scientists supported by the NIH fail to comply with the regulations.

I have assigned to the Office for Protection from Research Risks (OPRR), OD, NIH, Dr. Donald T. Chalkley, Chief, the task of coordinating all reports of violations by NIH intramural scientists. Investigation of such reports relating to NIH intramural personnel will be pursued in cooperation with the Deputy Director for Science. Dr. Earl C. Chamberlayne, Special Assistant to the Director, NIAID, will continue to serve as the Quarantine Officer of the NIH. He has available sets of regulations and guidelines regarding the appropriate packaging of hazardous materials. All questions on what may be shipped and how it should be packaged and marked should be addressed to Dr. Chamberlayne. He can be reached at Building 31, Room 7A50, NIH, Bethesda, Md., 20014, telephone (301) 496-2516.

Please ensure that all scientific and technical personnel under your supervision are acquainted with the substance of this memorandum and the attachment to it.

Ronald W. Lamont-Havers, M.D.

Attachment

Addressees: BID Directors
Scientific Directors
Intramural Laboratory and
Branch Chiefs
Intramural Section Heads