

# Advanced Photon Source

## User Policies and Procedures

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## Hazardous Material Transportation

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- No changes made to this procedure since its last review

### Prepared by:

Steve Davey, AES

### Reviewed by:

AES/ESH Coordinator  
PSC/UES Group Leader  
XSD/ESH Coordinator  
AES/MIS ADD

### Approved by:

AES/Division Director  
APS/Deputy Director, X-ray Science  
PSC/ESH-QA Coordinator

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## 1 SCOPE

This document describes: 1) requirements related to the transport of user hazardous materials, to and from the APS, on the Argonne site and 2) the on-site processes that help ensure that off-site, inbound and outbound shipments, meet the requirements of Argonne and off-site regulators such as the U.S. Department of Transportation.

The processes described in this document are for transporting **nonradioactive** materials only. The transportation of any radioactive materials must be arranged through the Argonne Material Control & Accountability (MC&A) group. Contact the User Safety Officer before shipping these materials to the APS.

## 2 INTRODUCTION TO TRANSPORT OF USER'S HAZARDOUS MATERIALS

*What is a hazardous material?*

For shipping/transporting purposes, Argonne/APS consider materials shipped to be hazardous if the materials are considered to be hazardous by the U.S. Department of Transportation (DOT). Consult your beamline personnel or an APS ESH Coordinator if you are not sure whether the material in question is a hazardous material.

*Can an APS user move hazardous materials around the Argonne site?*

When transported in accordance with the Small Quantity Exception (see [Section 7](#) below), users may move limited amounts of some nonradioactive hazardous materials. Aside from these Small Quantity Exception shipments: 1) under no circumstances may a user transport a hazardous material on the Argonne site in their own car or other personal vehicle and 2) all other hazardous materials shall be: sent to/received at the Argonne site by Argonne Shipping and Receiving Department hazardous materials receiving, transported on the Argonne site by Argonne transportation services, and shipped from Argonne by the Argonne Shipping and Receiving Department.

(Note: To reduce the need for transporting hazardous materials, users are encouraged to check if chemicals they require for their work are available from the APS stockroom or the host beamline.)

### 3 OPTIONS FOR NON-RADIOACTIVE APS USER SHIPMENT HANDLING

Summary of who can handle user on-site shipments.

| DOT Hazard Classification               |   | Options for Shipment Handling             |                                    |   |
|---|---|---|------------------------------------|---|
|   |   | Argonne Shipping and Receiving Department | User Transport on the Argonne Site | User Arranged Carrier Pickup  |
| Non-hazardous Material                  | Including dry shippers not containing DOT hazardous materials         | allowed                                   | allowed                            | allowed for non-Argonne <sup>1,2</sup>  |
| Hazardous Materials and Dangerous Goods | 1. Small Quantities   | allowed                                   | allowed <sup>3</sup>               | ground ship only permitted for non-Argonne <sup>1,2</sup><br>Air/Rail/Water not permitted |
|   | 2. Bio-samples in dry shippers with frozen propane, etc. <sup>4</sup> | required                                  | permitted on the Argonne site only | not permitted   |
|   | 3. All other Hazardous Materials                                      | required                                  | not permitted                      | not permitted   |

<sup>1</sup> Shipping papers shall be addressed as from: User Name, User's Home Institution, c/o APS Sector \_\_\_\_, 9700 South Cass Avenue, Argonne, IL 60439

<sup>2</sup> If the sender is an Argonne employee or if Argonne material is being sent then the shipment must be arranged through the Argonne shipping department.

<sup>3</sup> In accordance with the small quantity exception.

<sup>4</sup> Air shipment allowed in accordance with the DOT requirements.

#### 3.1 Off-site shipments for Argonne Employees and Argonne Materials

To ensure Argonne compliance with transportation requirements and for property management tracking, if the sender is an Argonne employee or if Argonne materials or equipment are being sent, then the off-site shipment must be sent through the Argonne shipping department.

#### 3.2 APS Users and Argonne Shipping Department

The services of the Argonne shipping department are available to the APS users for transporting materials both on the Argonne site and to off-site locations. A valid user account with adequate funding is required to pay for freight charges incurred on the

user's behalf. As described below, some hazardous materials shipments must be sent through the Argonne shipping department.

## 4 INCOMING SHIPMENTS

Shipping address for User hazardous material being sent to the APS:

Recipient's Name  
c/o Building 46, Hazardous Materials Receiving  
APS/Argonne  
Sector No. \_\_\_\_\_  
Argonne National Laboratory  
9700 South Cass Ave.  
Argonne, IL 60439

To have a hazardous material shipped to you at the APS beamline:

- You need to ensure that the shipping personnel at your institution have all the information they need to properly prepare the shipment (e.g., identity of the material, amount of the material, and all associated hazards). Inform the shipping department preparing the shipment of any supplementary labeling information recommended by your beamline personnel or APS/Argonne transportation safety personnel to help ensure proper handling of the shipment upon arrival.
- Inform your beamline contacts of the planned shipment and arrange for any special handling the shipment may require upon arrival.

(Note: You are encouraged to have all shipping duties handled by persons at your home institution with appropriate hazardous materials training.)

## 5 OUTGOING SHIPMENTS

To ship a hazardous material from the APS to an off-site location:

- You need to provide your beamline personnel with all the information they need to prepare the shipment (e.g., identity of the material, amount of the material, and all associated hazards).
- You and your beamline staff will then work with the Argonne shipping department to prepare an Argonne shipping order and obtain appropriate packaging (see Argonne Laboratory Management System (LMS) for Hazardous Materials Transportation Safety requirements).

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## 6 USER ARRANGED OVERNIGHT SHIPPER PICKUPS

When it is impossible or impractical for the Argonne shipping department to prepare a time-critical, nonhazardous shipment (e.g., on weekends or late in the day), non-Argonne-employee users may arrange for an overnight shipper to pick up their package at the APS. For any user-arranged shipments:

- **the APS user and the APS user's home institution shall assume full responsibility for complying with the appropriate CAT/CDT, Argonne, U.S. Department of Transportation (DOT), and carrier requirements,**
- **the user shall not use a preprinted U.S. DOE/Argonne National Lab airbill,** and
- the user shall **not** use an Argonne account with the shipping company.

For these user-arranged shipments, the "from" portion of the airbill must be completed as follows:

User's Name  
User's Home Institution  
c/o APS Sector \_\_\_\_\_ (local contact's name at the APS is optional)  
9700 South Cass Avenue  
Argonne, IL 60439

This address will enable the carrier to directly contact the sender (rather than Argonne) to resolve any questions or problems with the shipment. The name provided should identify a person who is knowledgeable of the shipment's contents and familiar with its packaging, labeling and documentation.

## 7 SMALL QUANTITY EXCEPTION

The Argonne Transportation Safety Board approved the on-site hazardous material (HazMat) transportation by APS users, if done in compliance with Department of Transportation (DOT) Small Quantity Exceptions (49 CFR 173.4). The Laboratory allows:

1. If transported in full conformance with DOT regulations, the entry of small quantities of nonradioactive qualifying materials at any gate. [Refer to Table below for qualifying materials and quantity limits.]
2. If transported in full conformance with DOT regulations, the transport of small quantities of nonradioactive qualifying materials in user-driven vehicles across the Argonne site to the user facilities at the APS.
3. If prepared for transport in full conformance with the DOT regulations, the off-site transport of nonradioactive qualifying materials without the involvement of Argonne personnel.

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See Table 2 for a summary of the maximum quantities of materials that can be transported under the small quantity exception for various classes/divisions of hazardous materials.

No exception from the existing Argonne standards for handling radioactive materials was approved. All radioactive materials are to be transported to and from the APS in accordance with Argonne requirements (e.g., receipt at Building 46, on-site transfers by Argonne MC&A, off-site shipment by Argonne Facility Management Services, etc.).

Materials that are synthesized at Argonne and that have unknown hazards, and/or hazards not present in any of the reactants, must be reviewed and the hazards identified by Argonne-trained hazardous materials personnel prior to transport off the Argonne site. Also, for outbound user transport of hazardous materials, materials with different hazard classification shall be packaged in separate packages (i.e., only one hazard classification per package).

A standard packaging that meets the DOT small quantity requirements (49 CFR 173.4) is available to the users through the APS stockroom.

The APS, with the support of Argonne, coordinates training of the APS CAT/CDTs and XSD personnel on hazardous materials transportation requirements. The APS relies on the Argonne Training Management System to record user training and will provide training information upon request.

Users should be aware that there are additional requirements and restrictions that apply to the movement of materials by air and other common carriers.

Users also may arrange for a carrier to pick up these small quantity exception shipments, but they must be designated for "**ground transportation only.**"

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Table 2: Small Quantity Exception - Quantity limits of materials that may be transported to the APS by APS users. This table applies to ground transport only.

| DOT Class or Division Number  | Name of Class or Division                                      | Max. amount per container<br>[gram solid or ml liquid] |
|---|--|--|
| <b>MATERIALS THAT CAN BE TRANSPORTED BY APS USERS IN SMALL QUANTITIES ON THE ANL SITE</b> |  |  |
| Class 3   | Flammable and combustible liquid                               | 30   |
| Division 4.1  | Flammable solid  | 30   |
| Division 4.2, (PG II and III)   | Spontaneous combustible material                               | 30   |
| Division 4.3, (PG II and III)   | Dangerous when wet material                                    | 30   |
| Division 5.1  | Oxidizer   | 30   |
| Division 5.2  | Organic peroxide   | 30   |
| Division 6.1, (PG I)  | Poisonous material   | 1  |
| Division 6.1, (PG II and III)   | Poisonous material   | 30   |
| Class 8   | Corrosive material   | 30   |
| Class 9   | Miscellaneous hazardous material                               | 30   |
| <b>MATERIALS THAT CANNOT BE TRANSPORTED BY APS USERS ON ANL SITE</b>                      |  |  |
| Class 1   | All divisions of explosives and detonating devices             | 0  |
| Class 2   | Flammable gas, non-flammable compressed gas, and poisonous gas | 0  |
| Division 4.2, (PG I)  | Spontaneous combustible material                               | 0  |
| Division 4.3, (PG I)  | Dangerous when wet material                                    | 0  |
| Division 6.2  | Infectious agents  | 0  |
| Division 7  | Radioactive material   | 0  |

\* note PG = "packing group"



## 8 DRY SHIPPERS

Dry shippers are specially designed shipping containers that keep materials at liquid nitrogen temperatures for extended periods with no free-flowing liquid and are not regulated by the DOT. Properly packaged dry shippers that do not contain hazardous materials may be treated as nonhazardous shipments. Regardless of the designation of the material being shipped, **it is the user's responsibility to ensure that the shipment does not contain any free-flowing liquid nitrogen. Empty dry shippers** must be at room temperature or they are subject to IATA Dangerous Goods Regulations Packing Instruction 202.

The DOT has approved the air cargo transport of dry shippers containing cryogenically preserved nonhazardous biological samples preserved in small quantities of certain frozen refrigerants, by any shipping party, to and from the APS (refer to the following section 9). These air shipments shall be arranged by the Argonne Shipping and Receiving Department. Because of the time-critical nature of many of these shipments, APS users are allowed to transport **properly** labeled and packaged shipments **on the Argonne site**. To ensure the timely preparation of the shipment, the user should make advanced arrangements with the Argonne shipping department, including the identification of any special shipping requirements (e.g., the user should alert the Shipping Department of the inclusion of infectious agents or other hazards associated with the shipment).

### Resources

CAT/CDT/XSD representatives trained in transportation safety, the shipping department, AES User Safety Officer, and APS ESH Coordinators are all available to answer questions about shipping requirements or direct you to the appropriate resources to resolve any questions.

For additional information contact: User Safety Officer or APS Biosafety Officer

## 9 DOT AUTHORIZED CRYO-PRESERVED BIOLOGICAL SAMPLE AIR TRANSPORT

The U.S. Department of Transportation (DOT) has approved an Argonne request that “authorizes the cargo air transport of small samples of biological macromolecules (e.g., proteins, enzymes, antibodies, ribosomes, non-restricted viruses, DNA, RNA, etc.) contained in deeply refrigerated flammable or non-flammable gas and packaged in a ‘dry shipper’ charged with liquid nitrogen.” In a dry shipper, the cryogenic fluid has been immobilized in an absorbent material in the dewar. DOT regulations have previously permitted the use of dry shippers, the request approval allows for the air transport of biological samples preserved in small quantities of propane, ethane, chlorodifluoromethane, and other refrigerant gases. A copy of the approval (number [CA-199807017](#), second revision dated October 22, 2002), including packaging requirements,

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labeling requirements, and other special provisions, is available online for your reference, link at the end of this section. Note: 1) this authorization applies **only** to shipments to and from Argonne, and that there may be additional requirements for transporting your shipment outside of the United States (refer to section 6c); and 2) there are additional measures that are required for transporting infectious agents, and guidance can be provided by Argonne/ESH transportation safety personnel.

You must ensure that your in-bound or out-bound shipment meets all of the requirements specified in DOT approval.

### Argonne-originated shipments

To arrange for your dry shipper to be picked up for an outbound shipment from Argonne, contact Argonne Site Services Material Handling personnel. The arrangements will include where and when to pick the package up and a CAT/CDT/XSD contact.

The following must accompany the material to be shipped:

1. a completed Argonne Shipping Order (form ANL-126), providing the off-site shipping information,
2. a completed Hazardous Material Manifest/Cargo List (form [PFS-SS/MAT 001](#), online copy available through the link at the end of this section), providing the on-site driver with the on-site transport directions and a manifest, which includes proper shipping name, DOT hazardous classification and UN number (for assistance contact Argonne shipping at 630.252.2934),
3. MSDS, to help expedite shipping department hazards identification and verification of the material classification), and
4. per the DOT requirement, a copy of the DOT approval letter (follow link below).

### Shipments to Argonne

The DOT approval includes requirements that any individual that prepares hazardous materials for transportation is trained on the requirements and conditions of the approval, as well as on the general requirements of DOT regulations (refer to section 6 d of the DOT approval for specific federal regulation references). Argonne encourages you to use the trained shipping personnel at your home institution and ensure that they are aware of the conditions of the DOT approval. Additional HazMat personnel training can be provided through Argonne and is available from the DOT. (On-line DOT HazMat and training information can found on the DOT web-sites <http://hazmat.dot.gov> and <http://www.text-trieve.com/tsi/>.)

Be aware that you should verify that the air carrier you plan on using will accept the shipment for transport and determine whether the carrier has any the specific

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requirements of their own. Currently Argonne has worked with FedEx, who has agreed to accept these shipments from Argonne.

CAT/CDT/XSD safety personnel and the Argonne shipping department (telephone 630.252.2934) can provide guidance and can answer your questions regarding the shipment of hazardous materials.

Links:

[DOT Approval CA-199807017 - rev. 2, 22 Oct. 2002](#)  
[Hazardous Material Manifest/Cargo List](#), form PFS-SS/MAT 001 (Rev. 4/99)

## 10 REFERENCES

1) 49 CFR 171 and 173  
Handling Hazardous Materials ([ecfr.gpoaccess.gov](http://ecfr.gpoaccess.gov))

## 11 FEEDBACK AND IMPROVEMENT

If you are using this procedure and have comments or suggested improvements for it, please go to the [APS Policies and Procedures Comment Form](#) \* to submit your input to a Procedure Administrator. If you are reviewing this procedure in workflow, your input must be entered in the comment box when you approve or reject the procedure.

Instructions for execution-time modifications to a policy/procedure can be found in the following document: Field Modification of APS Policy/Procedure ([APS\\_1408152](#)).

\* <https://www1.aps.anl.gov/Document-Central/APS-Policies-and-Procedures-Comment-Form>