

MATERIALS TRANSPORTATION PLAN
COLORADO SCHOOL OF MINES RESEARCH INSTITUTE
SITE ENVIRONMENTAL ASSESSMENT

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Project # 2112

Prepared for:

Colorado School of Mines
Golden, Colorado

Prepared by:

New Horizons Environmental Consultants, Inc.
6585 S. Wright Street
Littleton, CO 80127

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TABLE OF CONTENTS

1.0 Introduction.....	1
2.0 Material Classification.....	1
2.1 Industrial Waste.....	1
3.0 Transport Protocols.....	1
3.1 General Transportation Guidelines.....	1
3.1.1 Shipping Papers.....	1
3.1.2 Other Guidelines.....	2
3.1.3 Radiation Control Limitations.....	2
3.1.4 Vehicular Surveys.....	3
4.0 Emergency Response.....	3
4.1 Carrier's Responsibilities.....	3
4.1.1 Preparation of Response Plan.....	3
4.1.2 Emergency Notifications.....	4
4.1.3 Emergency Response Training.....	4
4.2 Contractor's Responsibilities.....	4
4.2.1 Emergency Notifications.....	4
4.2.2 Response Equipment and Personnel.....	5
4.2.3 Incident Review.....	6

MATERIALS TRANSPORTATION PLAN

COLORADO SCHOOL OF MINES RESEARCH INSTITUTE

1.0 INTRODUCTION

As part of the site environmental assessment project at the Colorado School of Mines Research Institute (CSMRI) facility located in Golden, CO (Site), solid waste materials in bulk quantity will be transported over public roadways to various disposal and/or recycling facilities. This *Materials Transport Plan* (MTP) describes the classification of material(s) to be transported, specifies the transportation protocol for the material(s), and details the emergency response plan for material(s) in transit.

2.0 MATERIAL CLASSIFICATION

The type of material to be transported from the site is limited to solid waste, principally solid material resulting from industrial operations. Materials to be transported from the CSMRI site are classified as solid waste as defined in 6 CCR 1007-2, section 1.2 as detailed below.

2.1 Industrial Waste

This material consists of solid waste including materials resulting from the mineral research activities that are not hazardous waste.

3.0 TRANSPORT PROTOCOLS

This MTP establishes protocols for the packaging and transportation of the solid waste that are intended to minimize potential occupational and public exposures. These include requirements for packaging, shipping papers, loading, transporting, and radiological protection in order to ensure that potential exposures remain As Low As Reasonably Achievable (ALARA). General transportation guidelines established in this MTP are listed below.

3.1 General Transportation Guidelines

The following guidelines apply to all material types and shipments.

3.1.1 Shipping Papers

Each solid waste materials shipment shall be accompanied by shipping papers that includes, at a minimum, the following information:

- The name and address of the shipper, carrier, and destination
- Emergency contacts and a 24-hour emergency phone number for the shipper
- A detailed description of the material
- The total quantity of material in the shipment
- Certification by the carrier that the shipment conforms to DOT transportation requirements

3.1.2 Other Guidelines

The following general guidelines will apply to all shipments:

- All initial, intermediate, and final loading and unloading operations will be carried out under the direction of New Horizons by personnel trained and appropriately equipped for the material type.
- All shipments will be by closed or covered transport vehicle.
- Material cannot be loose in the transport vehicle, or if the vehicle is the package, there must be no leakage of material from the vehicle.
- All packages will be secured during transport to prevent shifting.

3.1.3 Radiation Control Limitations

Transportation of solid waste does not require limitations on radiation control, however in an effort to transport site materials in the safest and most health protective manner, New Horizons will adopt the material shipment specific radiation control limitations required for the transportation of LSA-1 and SCO-I low-toxicity alpha emitters. These limits are imposed on the radiation dose rate, external contamination, and total quantity of material per shipment. The adopted general and material-specific limitations are listed below.

- External dose rates for each shipment will not exceed 1 rem/hr (10 mSv/hr) at 3 m from the load (for an unshielded cargo), 200 mrem/hr (2 mSv/hr) on the conveyance or package surface, or a maximum transport index of 10. Any shipment exceeding the 200 mrem/hr surface limit, or a transport index of 10, will meet the dose rate limitations listed in 49 CFR Part 173.441(b).
- Fixed radioactive contamination on the surface of any shipment will not exceed 5,000 dpm/cm². Shipments will not exceed 5,000 dpm/100cm² prior to shipment or at any time during transport. All shipments are subject to a fixed radioactive contamination survey prior to departure from the site. Contamination control surveys are performed in accordance with the SAP.

- Removable (i.e. non-fixed) radioactive contamination on the surface of any shipment will not exceed 1,000 dpm/100cm². Shipments will not exceed 1,000 dpm/100cm² prior to shipment or at any time during transport. All shipments are subject to a non-fixed radioactive contamination survey prior to departure from the site. Contamination control surveys are performed in accordance with the SAP.

3.1.4 Vehicular Surveys

Vehicles used for shipments will be surveyed after each use and decontaminated to levels below 0.5 mrem/hr (0.005 mSv/hr) on any accessible surface, with no significant non-fixed surface contamination remaining (49 CFR Part 173.443 (c)). Transport vehicles may be reused without decontamination to the limits listed in accordance with 49 CFR Part 173.443 (d), if the following restrictions are observed:

- Vehicles must remain closed at all times except for loading and unloading.
- Radioactive contamination must not exceed 5,000 dpm/cm² for fixed radiation, and 1000 dpm/cm² for removable radiation with maximum exterior survey results of 10 mrem/hr (0.1 mSv/hr) surface and 2 mrem/hr (0.02 mSv/hr) at 1 m from the surface.

4.0 EMERGENCY RESPONSE

Emergency response procedures for potential transportation accidents or material spills on the public highways are listed below. Note that this procedure does *not* include response actions for accidents and spills that occur on the CSMRI site. Response activities on the CSMRI site are covered in the project specific *Health & Safety Plan*, with New Horizons personnel considered the principal respondents for access road incidents.

The carrier has the primary responsibility for response operations in the event an accident and / or spill occurs during the transportation of materials. New Horizons personnel will respond with specialized equipment and trained personnel to assist in the prompt retrieval of any material spilled at the incident site. General carrier responsibilities are listed below, followed by the New Horizons response protocols.

4.1 Carrier's Responsibilities

4.1.1 Preparation of Response Plan

The carrier must have a response plan in place for potential accidents and / or spills that may occur during material transport. The carrier is responsible for providing sufficient labor and equipment to mount an effective response to any spill, including RQ quantity spills. The carrier must also have access to external services for responding to potential spills and accidents that exceed the carrier's own internal resources. These external services must be listed in the carrier's emergency response plan. The selected carrier must submit a copy of its emergency response plan for solid materials transport under this procedure.

4.1.2 Emergency Notifications

The carrier must immediately notify the following specific entities, in addition to local emergency responders, if a material spill occurs during transportation:

- The USDOT at (800) 424-8802
- The Contractor at the Emergency Contact numbers listed on the Shipping papers and / or the "*Driver Emergency Notification Procedure*" form.

Within 30 days of the occurrence, the carrier will also report the incident to the USDOT on Form F 5800.1.

4.1.3 Emergency Response Training

The driver of any vehicle involved in a spill of material must be trained and equipped to fulfill the following requirements:

- Provide notification to internal dispatch, local authorities, and New Horizons personnel, as necessary.
- Provide area control and the preliminary containment of spilled materials.

A *Material Data Sheet* describing the material being shipped and emergency response information relevant to that specific material is included in the emergency response information packet supplied with each shipment.

4.2 Contractor's Responsibilities

New Horizons' response to any transportation incident that involves a spill of material will proceed in three phases:

4.2.1 Emergency Notifications

The first person at the CSMRI site or disposal/recycling facility that receives notification of a potential spill of material will immediately notify New Horizons Project Manager and the site Radiation Safety Officer (RSO). The New Horizons Project Manager will act as the Emergency Coordinator during transportation incidents. Alternate Emergency Coordinators include the Site Health and Safety Officer (HSO) and the CSMRI Project Manager.

The Project Manager or RSO will immediately contact the CSMRI Project Manager, and the situation will be evaluated to determine the necessity of field response operations by New Horizons or carrier personnel, and the appropriate level of government agency notification. The CSMRI Project Manager will subsequently notify other officials and the agencies identified in the following Table (as appropriate).

Agency	Department	Telephone
Colorado Department of Public Health and Environment	Emergency Management Unit	(303) 756-4455
Colorado Department of Public Health and Environment	Laboratory and Radiation Services Division	(303) 692-3066
Colorado Emergency Operations Center	Emergency	(303) 279-8855
Environmental Protection Agency *	National Response Center	(800) 277-8914

* for spills exceeding the applicable Reportable Quantity (RQ)

The New Horizons Project Manager will notify and assemble the appropriate technical staff personnel for field response operations, if warranted by the ongoing incident evaluation. The Project Manager and RSO will arrange for effective alternate coverage of their area of responsibility during scheduled, or unscheduled, periods of absence. The Project Manager shall ensure that the training level of alternates will be suitable to effectively discharge the duties assigned them.

4.2.2 Response Equipment and Personnel

Response operations by New Horizons personnel are limited to the performance of specialized material surveillance and monitoring activities, affected area boundary establishment, area control, and tracking and oversight functions for both New Horizons and non-New Horizons response personnel and equipment, and the general public. The transporter is committed to rendering all possible technical assistance required for the prompt retrieval of spilled material and the restoration of affected areas to a level as close to original conditions as can be reasonably achieved.

Trained personnel will be available at each site for response to transportation incidents. The following New Horizons personnel are committed for field response to any potential release of materials during transportation:

Name	Telephone Number
Robert Krumberger	(303) 647-1055
Jonathan Spencer	(303) 932-2220
Stan Bouse	(303) 932-2220
David Mercer	(303) 932-2220

An inventory of occupational health and environmental monitoring equipment will be available at the project site **and the disposal/recycling facility**. The RSO (or his designee) will be responsible for collecting and preparing for use the equipment listed below (or its equivalent) during potential field response situations.

- 2 Gamma Survey Meters ($\mu\text{R/hr}$)
- 2 Alpha Contamination Survey Meters (one fixed and one non-fixed)
- 2 Personnel Sampling Pumps
- 4 Breathing Zone Sample Canisters
- 4 Air-Purifying Respirators (HEPA filters)
- 1 Case of Small LDPE Sample Bottles
- 1 50 Unit Lot Each of Small, Medium, and Large Sample Bags
- 1 Set of Soil Sampling Equipment
- 2 Rolls of Barrier Tape (“*Danger - Keep Out*”)

A *Field Operations Outline*, for use by the RSO or the designated Emergency Coordinator, has been provided as *Attachment 1*.

4.2.3 Incident Review

Within 48 hours of an incident response, New Horizons and the carrier will review operating methods, procedures, equipment, and training for adequacy of content and implementation. Changes will be made to any, or all, of these categories if indicated by the incident review. In addition, the field response team will review the actions taken during the incident response. This review will be documented and a report shall be issued which contains the findings and any applicable recommendations.

Within 30 days of an incident response, CSMRI, New Horizons, the carrier, and relevant State and local agencies will review the incident and subsequent operations to determine if any corrective actions in planning or implementation are necessary. This review will be documented and a report shall be issued which contains the findings and any applicable recommendations.

Attachment 1

FIELD RESPONSE OPERATIONS OUTLINE

The following outline serves as a guideline for field response operations. Deviations from this outline may be warranted due to actual field conditions at the site.

1. Determine necessity of field response operations during ongoing incident evaluation by the Emergency Coordinator (Project Manager) and/or the RSO.
2. The Project Manager will designate field response personnel, who will collect field equipment and transportation, during the incident evaluation. Additional equipment may be collected, if field personnel deem it relevant.
3. The Emergency Coordinator will attempt to coordinate the field response efforts with any local emergency response agencies, prior to the arrival of a field response team at the incident site.
4. All assembled response personnel will proceed to the incident site and report to the local Incident Command structure, if the incident evaluation indicates a field response is necessary. The New Horizons Project Manager will assume Incident Command functions if no official command structure exists. As Incident Commander, the New Horizons Project Manager will coordinate all response activities until relieved by a higher authority. In all cases the New Horizons Project Manager will coordinate field response activities with other responding personnel and / or official agencies.
5. All New Horizons field response personnel may receive training according to applicable regulatory requirements. Training topics and material may be revised at the discretion of the site RSO.
6. Trained field response personnel may provide the following functions, where necessary.
 - Area control and assistance in material containment.
 - Exposure monitoring for contaminants of concern.
 - Definition of the potential contamination area boundary.
 - Technical assistance for material control and remediation techniques.
 - Incident-related personnel and equipment tracking.