National Human Exposure Assessment Survey (NHEXAS)

Arizona Study

Quality Systems and Implementation Plan for Human Exposure Assessment

The University of Arizona
Tucson, Arizona 85721

Cooperative Agreement CR 821560

Standard Operating Procedure **SOP-UA-G-2.0**

Title: Isolation of Malfunctioning or Damaged Equipment

Source: The University of Arizona

U.S. Environmental Protection Agency
Office of Research and Development
Human Exposure & Atmospheric Sciences Division
Human Exposure Research Branch

Isolation of Malfunctioning or Damaged Equipment

1.0 PURPOSE AND APPLICABILITY

The purpose of this SOP is identify and isolate malfunctioning or damaged equipment for the NHEXAS Arizona Research Project. This procedure must be followed to ensure consistent data custody, storage, transfer and analysis of a high quality for the NHEXAS ~~Arizona~~ Projects of the University of Arizona/Battelle/Illinois Institute of Technology Consortium.

Border and other Health & Environment
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2.0 DEFINITIONS

2.1 SOP = Standard Operating Procedure

2.2 DAMAGED EQUIPMENT LABEL (DOWN LABEL) = A bright red label providing information about the down or malfunctioning piece of equipment (Fig. 1). The original is attached to the malfunctioning equipment by the person who discovers the malfunction and a photocopy is forwarded to the section coordinator or manager.

2.3 DOWN EQUIPMENT = Malfunctioning equipment which may be broken or out of calibration specifications.

2.4 HRP OFFICE = The Health Related Professions building, located at 1435 N. Fremont Avenue, Tucson Arizona 85719. This is an annex of the Respiratory Sciences Center and the primary site of operations for NHEXAS Arizona.

2.5 IN-HOUSE = Repairs performed at the HRP Facility.

2.6 OFF SITE = Repairs performed away from the HRP Facility.

2.7 VENDOR = A University of Arizona approved private sector contractor.

3.0 REFERENCES

3.1 Lebowitz, M.D. 1993. Study Design (Revision of 31 Dec. 1993). EPA NHEXAS Cooperative Agreement

4.0 Discussion

This SOP outlines the correct procedure to identify and isolate malfunctioning, damaged and broken equipment from functioning equipment.

5.0 RESPONSIBILITIES

5.1 The Co-Principal Investigator is responsible for:

5.1.1 Final review and approval of this procedure,
5.1.2 Providing fund numbers to the section coordinators and area managers to contract for repairs by outside vendor repairs when applicable.

5.2 The Project Field Coordinator (or delegate) is responsible for:

5.2.1 Knowing and following the procedures outlined by this protocol for identifying and isolating malfunctioning equipment.
5.2.2 Facilitating the repair of malfunctioning equipment by assisting area supervisors, generating the necessary paperwork to contract for off-site repairs, and shipping the equipment to the vendor when in-house repairs are not feasible.
5.3.3 Maintaining the Equipment Repair Log book containing the Equipment Repair Forms (Figure 2) which are completed every time a piece of equipment requires repair.

5.3 The Project Staff are responsible for:

5.3.1 Knowing and following the procedures outlined by this protocol for identifying and isolating malfunctioning equipment.
5.3.2 Arranging for the repair of the malfunctioning item in a timely manner.
5.3.3 Providing their area supervisor or project coordinator with a photo-copy of the completed down equipment label as soon as possible, and isolating the malfunctioning item to the down equipment area whenever possible.
5.3.4 Labeling the down equipment effectively to avoid further use by other project staff before repair.
5.3.5 Completing the Damaged Equipment Report Tag (Figure 1) as completely as possible.

6.0 MATERIALS AND REAGENTS

6.1 Materials

Materials and equipment required include the Damaged Equipment Report Tag (Figure 1), a photocopy machine to duplicate the label and forward the copy to the area supervisor or coordinator, and the Equipment Repair Form (Figure 2) used document the repair process.

6.2 Reagents - N/A

7.0 Procedure

7.1 Preparation - N/A

7.2 Identification of Malfunctioning equipment.

(a) If it is determined that a piece of equipment is not working properly upon calibration or through other inspection, record all pertinent information on a Damaged Equipment Report Tag (Figure 1). Describe the problem as concisely as possible, list any trouble shooting methods employed, and the results.
(b) Photocopy the Damaged Equipment Report Tag.
(c) Attach the original copy of the Damaged Equipment Report Tag on a visible portion of the malfunctioning equipment.
(d) Place the photocopy of the Damaged equipment Label in the responsible project coordinator's mail box located in the main office area of the HRP Facility.

7.3 Isolation of Malfunctioning Equipment.

(a) Small pieces of malfunctioning equipment may be flagged with the Damaged Equipment Report Tag and moved to the designated down equipment storage area away from functioning equipment.
(b) Larger pieces of damaged equipment which cannot be moved relatively easily to the Damaged Equipment Area must be clearly red-flagged by the Damaged Equipment Report Tag.
(c) In cases where the equipment may not be moved to the Damaged Equipment area the Damaged Equipment Report Tag should reflect the location of the malfunctioning item.
(d) Coordinate with pertinent staff members to protect against sample loss or integrity violations.

7.4 Repairs

7.4.1 In-house

(a) The responsible project coordinator will assign the malfunctioning item to an in-house technician for repair whenever possible.
(b) The assignment for repair will be recorded on the Equipment Repair Form (Figure 2).
(c) The in-house repair person will repair the item if possible.
(d) Supplies needed to repair the equipment will be ordered by the responsible project coordinator.
(e) If repair parts and labor cost less than 1/3 of the value of the piece of equipment the project coordinator is authorized to order the repair. If the repair costs

more than 1/3 of the value of the piece of equipment or greater than $200 the Co-Principal Investigator must authorize the repair.

(f) Once the item has been repaired it is returned to the area supervisor for testing and recalibration as appropriate.

7.4.2 Vendor or Off Site repairs:

(a) The Project Field Coordinator will facilitate the selection of an appropriate vendor and assist the area supervisor with the arrangements to ship the malfunctioning item for repair as applicable. An initial repair estimate is obtained from the vendor.

(b) The equipment is forwarded for repair.

(c) A final estimate is obtained.

(d) If repair parts and labor cost less than 1/3 of the value of the piece of equipment the project coordinator is authorized to order the repair. If the repair costs more than 1/3 of the value of the piece of equipment or greater than $200 the Co-Principal Investigator must authorize the repair.

(e) When returned from a vendor or off-site source, the equipment repair status section of the Equipment Repair Form is completed as the repaired item undergoes testing and re-calibration.

7.5 Equipment Disposal

(a) Supply items do not require special handling for disposal except in cases where the piece of equipment contains glass, etc. Safety issues in equipment and waste disposal will be rigidly adhered to by all personnel.

(b) All capital equipment with U/A Property tags will be disposed of in accordance with the most current procedures obtained through the Research Division business manager. Some items may be disposed of through Stores/Surplus. Final disposal will follow UA Policy guidelines.

7.6 Calculations - N/A

7.7 Quality Control

If equipment does not meet calibration standards after repair, it is returned to the in-house technician or off-site vendor for further repair.

7.7.1 Tolerance Limits

There will be zero tolerance for the use of damaged or malfunctioning equipment. After repair, all equipment must be able to be calibrated within the same levels of accuracy, precision and confidence.

7.7.2 Detection Limits - N/A

7.7.3 Corrective Actions

If equipment does not meet calibration standards, it is returned to the vendor or technician for further repair in accordance with Steps 7.2 to 7.5 in this SOP.

8.0 RECORDS

8.1 The Damaged Equipment Report Tag is a bright red "flag" which documents the fundamental symptoms of the malfunctioning instrument. It is completed by the person who discovers the malfunction and photo-copied to notify the project coordinator. After Repair, the original should be placed in the pertinent equipment folder housing the miscellaneous documentation which accompanied the piece of equipment when it was purchased, after the repair is complete.

8.2 The Equipment Repair Form is used to track the location and repair status of a malfunctioning piece of equipment. It is completed by the area supervisor or delegate and is maintained by the Field Coordinator. The original should be filed in the Equipment Repair Form Log and a photocopy placed in the pertinent equipment folder once the repair is complete.

8.3 The Equipment Maintenance Sheet is used to document the repair, maintenance and operational history of all equipment used in the NHEXAS AZ Project. Status information, oil or fluid changes, inspections or periodic maintenance should be documented on this form. The form is initiated by the Materials Technician once the sample is received from the distributor. Additional copies are added as needed.

Figure 1. Damaged Equipment Report.

DAMAGED EQUIPMENT REPORT

Equipment ID#:_____
Type of Equipment:_____
Date of Report:___/___/___ Tech Initials:_____

Type of problem:_____

_____

_____

_____

Reported to: [] area supervisor / project coordinator
Equipment part of: [] Field [] lab [] data process
[] Analysis [] other:_____

(copy to Section Coordinator & attach tag to equipment)

FORM UA-G2.0-1.0

Figure 2. Equipment Repair Form

EQUIPMENT REPAIR FORM

EQUIPMENT INFORMATION

Equipment Category_____
Brand and Model_____

Serial No._____ UA Property Tag #_____

Equipment Problem: COMMENTS:_____

[ ] Functions with problems
[ ] Not functioning repair

BILLING:

Resp-Sci Acct # _____ Other Univ. Acct #_____
Other Method of Payment_____

EQUIPMENT REPAIR INFORMATION

Preliminary Evaluation

University Vendor: yes no Vendor #_____
Current market value of this piece of equipment: _____
Estimate Obtained: yes no Estimated Cost:_____

Is the cost of repair less than half the cost of replacement? yes no
If no, discuss replacement option with the project officer.

Project officer's approval: yes no Signature:_____

Repair Information

Repair entity: Name: _____
Address: _____

Phone_____ Fax:_____

Date submitted for repair:_____ Anticipated completion of Repair: _____ Date Repaired & Returned _____

EQUIPMENT RETURN STATUS

Fully Repaired [ ]
Partial Repair [ ] Date Returned
Meets Standards [ ] Fails to meet Standards [ ] to the Field_____

FORM UA-G2.0-2.0

Figure 3. Equipment Maintenance Sheet.

EQUIPMENT MAINTENANCE SHEET

ID #:_____

Date	By	Remarks/Corrective Actions

FORM = UA- G5.0 - 2.0