

# 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-D-33.0**

**Title:** Light Pen Operation and Verification of Scanned Bar Codes

**Source:** The University of Arizona

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

**Notice:** The U.S. Environmental Protection Agency (EPA), through its Office of Research and Development (ORD), partially funded and collaborated in the research described here. This protocol is part of the Quality Systems Implementation Plan (QSIP) that was reviewed by the EPA and approved for use in this demonstration/scoping study. Mention of trade names or commercial products does not constitute endorsement or recommendation by EPA for use.

## **Light Pen Operation and Verification of Scanned Bar Codes**

### **1.0 Purpose and Applicability**

This procedure defines the steps needed to operate the light pens, and verify the values produced by light pens that will be used in NHEXAS, the Border Study and other Health and Environment projects.

### **2.0 Definitions**

- 2.1 BORDER STUDY : An alias for "Total Human Exposure Arizona: A comparison of the border communities and the state" conducted in Arizona by the University of Arizona/Battelle/Illinois Institute of Technology consortium.
- 2.2 LIGHT PEN: Input device which, when used with bar code reading software, allows the reading of bar codes.
- 2.3 HEALTH AND ENVIRONMENT PROJECTS (or H & E) : An umbrella title for all projects funded to M. D. Lebowitz and/or M. K. O'Rourke (or their designees) which examine purported or real relationships among environmental factors and any aspect of human health.
- 2.4 HRP SITE: The **H**ealth **R**elated **P**rofessions building, located at 1435 North Fremont Avenue; Tucson, AZ 85719. This is an annex of the Arizona Prevention Center and the primary site of NHEXAS Arizona.
- 2.5 NHEXAS Arizona: Acronym for National **H**uman **E**Xposure **A**ssessment **S**urvey, a research project conducted in Arizona by the University of Arizona/Battelle/Illinois Institute of Technology Consortium.
- 2.6 TS: Acronym for the **T**racking **S**ystem, a program written in FoxPro 2.6 for the express purpose of maintaining an electronic custody record for samples used in the NHEXAS project (see overviews Figures 2 and 3).

### **3.0 References**

Anonymous (1994), Scan One: User's Guide, Vertical Technologies, Inc., Salt Lake City, 52pp.

#### **4.0 Discussion**

Light pens are used to read bar codes into the Tracking System (see UA-D-28.x). A user may choose to manually type a Sample ID number into the TS. However, users are encouraged to use the light pen to scan the bar code.

Bar codes are useful for representing complex, constant codes, and allow a faster, more accurate alternative to hand-entry of data. To ensure data validity it is necessary to check the value read is indeed the code appearing on the bar code.

The light pens themselves are attached via a serial connection to COM1 or COM2 of a computer. The pen is powered up when the computer is turned on. Should the pen fail to come on then it needs to be replaced by simply connecting another light pen into the same serial port.

#### **5.0 Responsibilities**

N/A

#### **6.0 Materials and Reagents**

Light Pen: Hewlett-Packard HBSC-A300

#### **7.0 Procedural Steps for Coding of Field Forms**

1. When prompted to enter a Sample ID number simply run light pen over bar code.
2. Repeat step 1 until code appears in the data entry field of the TS.
3. Compare code on screen with number above bar code. If the code is correct continue, else press the escape key to erase the number and repeat steps 1 through 3.