ATSDR’s Library of Chemical Exposure Questions
Chemical Exposure Questionnaire Library

What is it?

- Library of more than 200 chemical exposure questions
- Investigators build site-specific questionnaires
- Questions help investigators get quickly to possible sources of exposure (i.e., hobbies, jobs, recreational activities, etc)
Who Should Use the Library?

- People who are regularly doing exposure investigations at either the state or federal level. Note: States conducting EIs with ATSDR must use this library to meet our OMB requirements.
- Physicians and others taking exposure histories.
- People developing new chemical exposure programs, particularly those concerned with chemical terrorism.
Source of the Questions

Derived from a variety of sources, including the questions used at ATSDR in exposure investigations, plus well-tested questions used in national questionnaires by EPA and CDC.
Electronic Library

- Summer of 2006, ATSDR put library into a software package (Rapid Data Collector or RDC) and conducted a pilot test.
- Questions can be accessed and combined to help create situation-specific exposure questionnaires.
- Developing some templates.
- Also be available in hard copy and in Microsoft Word.
Questionnaire Library Categories - Confounders

Confounders for Biologic Samples:
What other sources of that chemical could the participant be encountering?

- Occupation
- Medicines
- Lifestyle
- Foods
- Hobbies
- Health Conditions
- Household Uses or House Construction
Exposure Factors:
What activities would cause someone to have more exposure than another?

- **Soils:** Gardening, Playing, Pets
- **Foods:** Garden Veg, Fish, Game, Domestic
- **Water:** DW source, Plumbing
- **Air:** Indoor/Outdoor Odors, Symptoms, Length of time indoors, House construction, etc
Example from PILOT TEST
Background

- The XYZ lead smelter is an active facility that has been in operation in Dael (population 2,800) since 1892
- Located in a residential neighborhood
Methods

- **Participants:**
  - ATDSR staff and personal colleagues

- **Questionnaire Information:**
  - Provided participant profiles including gender, age, race, and number of children
  - Provided participants fictitious addresses, phone numbers, and map
  - Participants chose their occupation, housing age and condition, drinking water sources, and hobbies
Methods Continued

- Data Collection and Analysis:
  - Face to face interviews
  - Phone Interviews
  - Microsoft Excel
  - RDC Simple Statistics Response Function
Results
Phone Interviews

- Used with RDC web
- Impersonal
- More Convenient
- Less time consuming (Average 15 min)
Face to Face Interviews

- Used RDC Windows Version
- Personal
- Less convenient
- More time consuming (Average 20 min)
Example Screen in RDC

Indoor Air
Script - These questions will help us determine the possible sources of air pollutants in your household and any symptoms or conditions that would make breathing pollutants more harmful to you.

Time Indoors
How many hours per day do you usually spend inside your home on a weekday or the days you are working outside the home? (12 midnight to 12 midnight)
- < 8 hours
- 8 - 14 hours
- 15 - 24 hours

How many hours per day do you usually spend inside your home on a weekend or the days you are home from work?
- < 8 hours
- 8 - 14 hours
- 15 - 24 hours

How many fewer hours do you spend indoors during the warmer months? (How much additional time are you outside)?
- Same
- 1 - 9 hours
- 10 or more hours

Attributes of the Structure of Home
Is the home or building on a slab, does it have crawlspace, and/or basement?
- Slab
- Crawlspace
- Basement

What is the condition of your home or building?
- Good
- Fair
- Poor
Total Population Elevated Blood Lead Levels in Dael

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Confirmed BLLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 17 yrs</td>
<td>12344</td>
</tr>
<tr>
<td>18 - 24 yrs</td>
<td>12345</td>
</tr>
<tr>
<td>25 - 44 yrs</td>
<td>12346</td>
</tr>
<tr>
<td>45 - 64 yrs</td>
<td>12347</td>
</tr>
<tr>
<td>65 - 74 yrs</td>
<td>12348</td>
</tr>
<tr>
<td>≥ 75 yrs</td>
<td>12349</td>
</tr>
</tbody>
</table>

Zip Codes:
- 12344
- 12345
- 12346
Comparison of NHANES and Pilot Test

Age Groups

- 0-5
- 6-11
- 12-19
- 20 +

Average BLLs

- NHANES
- Pilot Test
EBLLs Vs Year House was Built

Number of Houses

Year

BLLs

0 - 4.9 μg/dL  5.0 - 5.9 μg/dL  6.0 - 24 μg/dL  7.0 - 7.9 μg/dL  8.0 - 8.9 μg/dL  ≥ 9 μg/dL
Example Conclusions

- Houses built in early-mid 1900s served as a contributor to lead exposure
- Distance from the smelter affected BLL
- Occupations dealing with lead contributed to exposure
## Top 5 BLL’s profiles

<table>
<thead>
<tr>
<th>ID</th>
<th>Distance</th>
<th>BLL μg/dL</th>
<th>Hobbies</th>
<th>Occupation</th>
<th>Protective Gear</th>
<th>Age of House</th>
</tr>
</thead>
<tbody>
<tr>
<td>001</td>
<td>0.75 mile</td>
<td>30</td>
<td>Gardening</td>
<td>Machinist XYZ Smelter</td>
<td>Gloves, eye protection</td>
<td>1960</td>
</tr>
<tr>
<td>005</td>
<td>1 mile</td>
<td>28</td>
<td>Fishing</td>
<td>Roofer</td>
<td>N/A</td>
<td>1980</td>
</tr>
<tr>
<td>028</td>
<td>0.5 mile</td>
<td>25</td>
<td>Soap making</td>
<td>Laborer XYZ Smelter</td>
<td>Gloves, overalls, eye protection</td>
<td>2000</td>
</tr>
<tr>
<td>016</td>
<td>2.5 miles</td>
<td>21</td>
<td>Jewelry Making</td>
<td>Office worker XYZ Smelter</td>
<td>N/A</td>
<td>1970</td>
</tr>
<tr>
<td>008</td>
<td>3 miles</td>
<td>20</td>
<td>Painting, reading</td>
<td>Office worker XYZ Smelter</td>
<td>N/A</td>
<td>1950</td>
</tr>
</tbody>
</table>
Benefits of Electronic Version

- Electronic version allows easy results downloads to evaluation software such as SAS, Excel, etc.
- Ease of creating individual profiles for evaluation and results distribution
- Ease of site-specific summaries by category
Summary

- The Library includes more than 200 chemical exposure questions that investigators can use to develop site-specific questionnaires for taking an exposure history.

- States conducting EIs under cooperative agreement with ATSDR must use this library to meet our OMB requirements. ATSDR will need a copy of your questionnaires and the results to report back to OMB.

- Electronic version offers many benefits.
ATSDR will post Word version of library on FTP site.

ATSDR will soon provide access to the Rapid Data Collector software and the electronic library of questions. More on this to come.

ATSDR will develop additional chemical-specific or issue-specific (indoor air, etc) templates and post them for your use. If anyone wants to help with the templates or provide topics for needed templates, contact Diane Jackson @ djackson3@cdc.gov or 404-498-0376.