Development of a Pesticide Log: Design and Testing of a Three-Month Diary of Infrequent Behavior

Jocelyn Newsome, Kerry Levin, and Jennifer Crafts
Survey Diaries

Survey diaries are a common tool for capturing detailed behavior over a period of time

(Dillman, Smyth, & Christian, 2009)

Respondents keep a detailed diary recording activities of interest

Diaries are a common means for government agencies to collect data on activities and expenditures

Examples:
- Daily activities
- Travel
- Diet
- Physical activity
- Purchases
Literature on Survey Diaries

Advantages

• Real-time data capture
• Potentially, more accurate data

Disadvantages

• Burden of reporting can lead to under-reporting of behaviors
• Completion may be postponed until the diary is due, and retrospective reporting often leads to over- or under-reporting

Gieseman, 1987; Smith, Webb, & Heywood, 1994; Ogle, 2005
Designing and Testing a Diary for a Pesticide Study

- Object of pilot study: capture household use of (and exposure to) pesticides in homes, lawns, and gardens
  - Included pesticides used on people and pets
  - Six-month study
  - Respondent task: complete two three-month logs to keep track of use of pesticides
Data to be collected for each application

<table>
<thead>
<tr>
<th>Full product name</th>
<th>EPA Registration Number</th>
<th>Reason for application</th>
</tr>
</thead>
<tbody>
<tr>
<td>(brand &amp; product)</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of product</th>
<th>Amount used</th>
<th>Date of application</th>
</tr>
</thead>
<tbody>
<tr>
<td>(e.g., aerosol, candle, foam, fogger, shampoo, bait, flea collar)</td>
<td>(including ounces for products mixed from concentrate)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who applied it, (Including age &amp; gender)</th>
<th>Where applied (including specific locations in and outside the home)</th>
<th>Safety precautions</th>
</tr>
</thead>
</table>
Development and Testing of the Log

Collaborative design
• survey methodologists and graphic designer

Internal Westat focus group
• employees in support & administrative roles

Development

Round 1 testing
• 25 respondents in three locations: Rockville, MD, Raleigh, NC, and Los Angeles, CA

Cognitive Testing

Round 2 testing
• 9 respondents in Rockville, MD
Today’s presentation will discuss our findings and revisions to three main components of the log:

Format of log entries

Icons

Instructions
Format of Log Entries for each Application
Next, we are interested in what form the product was in and how much was used.

### 11. Was the product ...  
- **a. An aerosol can?**  
  - Yes: 1 → GO TO Q11a  
  - No: 2 → GO TO Q11b

### 12. Amount Used  
- **a. How many ounces was the container?**  
  - Ounces: [_______]  
- **b1. Thinking about a full container, how much spray was used?**  
  - Spot treatment (small amount): 1  
  - Half the container or less: 2  
  - More than half, but not all of the container: 3  
  - Entire container: 4  
  - GO TO Q13

- **b. A concentrate?**  
  - Yes: 1 → GO TO Q12b  
  - No: 2 → GO TO Q11c

- **b. Was the concentrate ... (Circle one)**  
  - Powder: 1  
  - Liquid: 2  
  - Other: 3  
  - (Specify): [_______________]

- **b1. How many ounces of the concentrate were added to water or other liquid?**  
  - Ounces: [_______]  

- **b2. What was used to apply the product?**  
  - Trigger or pump sprayer: 1  
  - Hose end sprayer: 2  
  - Something else?: 91  
  - (Specify): [_______________]  
  - GO TO Qb5

- **b3. How much water or other liquid did you mix with the concentrate? (Indicate ounces or gallons)**  
  - Ounces: [_______]  
  - OR  
  - Gallons: [_______]  
  - GO TO Q13
Design: Application of Usability Principles

- Apply a minimalist design
- Present information in a natural and logical order
- Keep respondents aware of status
- Make strategic use of icons, color, and contrast
- Use visual elements consistently
Initial Visual Design for Paper Log

**LOG ENTRY 1**

**Survey of Home Insecticide Use | 3-Month Log**

Please fill out a new log entry for each and every time you use an insecticide.

**WHEN & WHAT**

- **Date of Application:**
  - [ ] Yes
  - [ ] No

- **Full Product Name:**
  - [ ] Protection gloves
  - [ ] Protective glasses
  - [ ] Special clothing like overalls
  - [ ] Dust mask
  - [ ] None

- **EPA Reg. No.:**
  - [ ] Yes
  - [ ] No

**WHO & WHY**

- **Who applied it?**
  - [ ] Someone in the household
  - [ ] Professional or landlord
  - [ ] Company Name

- **Telephone Number:**
  - [ ] Reason for Application:

**WHERE**

- **Was the product used only on furniture or bedding?**
  - [ ] Yes
  - [ ] No

- **Was the product used only in cracks and crevices or on baseboards?**
  - [ ] Yes
  - [ ] No

- **Was the product used on a person, pet, or pet's bedding?**
  - [ ] Yes
  - [ ] No

- **Check all that apply.**
  - Inside Home:
    - Whole house
    - Attic
    - Unfinished basement
    - Bedroom
    - Bathroom
    - Other living area (family room, living room, finished basement)
    - Dining room/living room/patio
    - Garage that is attached to your home
    - Other inside area (Specify)

- **Check all that apply.**
  - Outside Home:
    - Perimeter of house such as crawl space/foundation
    - Fenceroy/porch/deck
    - Lawn or grassy area
    - Vegetable garden
    - Flower garden
    - Garage or shed that is NOT attached to your home
    - Other outside area (Specify)

**HOW**

- **When the product was applied, were any of the following worn? Check all that apply.**
  - [ ] Protective gloves
  - [ ] Protective glasses
  - [ ] Special clothing like overalls
  - [ ] Dust mask
  - [ ] None

- **Did the person applying the product wash their hands when they were done?**
  - [ ] Yes
  - [ ] No

- **How quickly after the product was used did you or others use the treated space or come into contact with the treated pet?**
  - [ ] Immediately
  - [ ] Less than one hour
  - [ ] One to 2 hours
  - [ ] Three to 4 hours
  - [ ] More than 4 hours

**TYPE OF PRODUCT**

- **Choose 1**

  - [ ] Aerosol can
    - Size of can (in ounces)
    - Amount used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half, but not all of the container
      - [ ] Entire container

  - [ ] Fogger
    - Size of container (in ounces)
    - Number of foggers used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Granules, dust, powder, or pellets
    - Size of container (in ounces)
    - Number used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Bait station, trap, or fly strip
    - Number used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Candles or coil
    - Number used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Concentrate
    - Method of applying:
      - [ ] Handheld spreader
      - [ ] Walk behind or "push" sprayer
      - [ ] Spread directly from container
      - [ ] Something else
    - Volume used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Non-aerosol sprayer or pump bottle
    - Size of container (in ounces)
    - Amount used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Soap
    - Size of container (in ounces)
    - Amount used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Spot-on drops for pets
    - Size of container (in ounces)
    - Number of pets with collars:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container

  - [ ] Something else (Specify)
    - Amount used:
      - [ ] Spot treatment (small amount)
      - [ ] Half the container or less
      - [ ] More than half but not all
      - [ ] Entire container
Survey of Home Insecticide Use | 3-Month Log

LOG ENTRY 1

Please fill out a new log entry for each and every time you use an insecticide.

WHEN & WHAT

Date of Application

Full Product Name ____________________________

EPA Reg. No. ____________________________

☐ EPA Reg. No. not found

WHO & WHY

Who applied it?

☐ Someone in the household

☐ Male

☐ Female

Age __________

☐ Professional or Landlord

Company Name ____________________________

Telephone Number (___) - ____ - ________

Reason for Application ____________________________

HOW

When the product was applied, were any of the following worn? Check all that apply.

☐ Protective gloves

☐ Protective glasses

☐ Special clothing like coveralls

☐ Dust Mask

☐ None

Did the person applying the product wash their hands when they were done?

☐ Yes

☐ No

How quickly after the product was used did you or others use the treated space or come into contact with the treated pet?

☐ Immediately

☐ Less than one hour

☐ One to 2 hours

☐ Three to 4 hours

☐ More than 4 hours

☐ Used on a person

WHERE

Was the product used only on furniture or bedding?

Check all that apply.

Inside Home

Check all that apply.

Outside Home
WHERE

Was the product used only on furniture or bedding?

- Yes
- No

Was the product used only in cracks and crevices or on baseboards?

- Yes
- No

Was the product used on a person, pet, or pet’s bedding?

Check all that apply.

Person
Pet
Pet’s bedding

Check all that apply.

Inside Home

- Whole house
- Attic
- Unfinished basement
- Bedroom
- Bathroom
- Other living area (family room, living room, finished basement)
- Dining room/kitchen/pantry
- Garage that is attached to your home
- Other inside area (Specify)

Check all that apply.

Outside Home

- Perimeter of house such as crawl space/foundation
- Patio/porch/deck
- Lawn or grassy area
- Vegetable garden
- Flower garden
- Garage or shed that is NOT attached to your home
- Other outside area (Specify)
Findings from Round 1 Testing

- The generic two-page format intended to apply to any type of insecticide didn’t always work as intended.

- Respondent issues:
  - Reluctant to fill out a two-page entry for every single application of mosquito repellent
  - Difficulties answering some of the questions (e.g., where was it applied?) for pesticides applied to a person or pet
What Do I Do?

For the next three months, fill out a log entry for each and every time you use an insecticide.

An insecticide is a product used to control insects. Insecticides are used in homes, yards, gardens, as well as on pets and people.

INCLUDE

- Sprays or bait to treat roaches, ants, or other bugs in your home
- Sprays, creams, lotions, or shampoos that you put on your body to prevent mosquito or other bug bites or to treat for lice
- "Dust" or other pesticides for flower or vegetable gardens
- Insecticide granules or powder applied to grass or lawns
- Sprays, powders, spot-on products, or collars to prevent or kill fleas or ticks on your pet

DON’T INCLUDE

- Weed killers
- Rodent control
- Disinfectants

IF YOU USE AN INSECTICIDE ON A PERSON
Go To Page 4

IF YOU USE AN INSECTICIDE ON A PET
Go To Page 6

IF YOU USE AN INSECTICIDE IN YOUR HOME OR YARD
Go to the Log Entries Beginning on Page 8
Please fill out the information below for each insecticide used on a person, including sprays, creams, or lotions used to prevent mosquito, tick, or other bug bites. Please also include any lice treatments.

<table>
<thead>
<tr>
<th>Product 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BRAND &amp; PRODUCT NAME</strong></td>
</tr>
<tr>
<td>______________________</td>
</tr>
<tr>
<td>______________________</td>
</tr>
<tr>
<td><strong>EPA REG. NO.</strong></td>
</tr>
<tr>
<td>______________________</td>
</tr>
<tr>
<td>□ EPA Reg. No. unknown</td>
</tr>
<tr>
<td><strong>WHO WAS IT USED ON?</strong></td>
</tr>
<tr>
<td>□ Male</td>
</tr>
<tr>
<td>Did they apply it on themselves?</td>
</tr>
<tr>
<td>□ Yes</td>
</tr>
<tr>
<td>If NO, who applied it?</td>
</tr>
<tr>
<td>□ Male</td>
</tr>
<tr>
<td><strong>CHOOSE 1 TYPE OF PRODUCT</strong></td>
</tr>
<tr>
<td>□ Aerosol can</td>
</tr>
<tr>
<td>□ Non-aerosol sprayer or pump bottle</td>
</tr>
<tr>
<td>□ Shampoo</td>
</tr>
<tr>
<td>□ Lotion or cream</td>
</tr>
<tr>
<td>□ Other (specify)</td>
</tr>
<tr>
<td>______________________</td>
</tr>
<tr>
<td><strong>DATES USED</strong></td>
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<tr>
<td><strong>/</strong>/__</td>
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<table>
<thead>
<tr>
<th>Product 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BRAND &amp; PRODUCT NAME</strong></td>
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<tr>
<td>______________________</td>
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<tr>
<td>______________________</td>
</tr>
<tr>
<td><strong>EPA REG. NO.</strong></td>
</tr>
<tr>
<td>______________________</td>
</tr>
<tr>
<td>□ EPA Reg. No. unknown</td>
</tr>
<tr>
<td><strong>WHO WAS IT USED ON?</strong></td>
</tr>
<tr>
<td>□ Male</td>
</tr>
<tr>
<td>Did they apply it on themselves?</td>
</tr>
<tr>
<td>□ Yes</td>
</tr>
<tr>
<td>If NO, who applied it?</td>
</tr>
<tr>
<td>□ Male</td>
</tr>
<tr>
<td><strong>CHOOSE 1 TYPE OF PRODUCT</strong></td>
</tr>
<tr>
<td>□ Aerosol can</td>
</tr>
<tr>
<td>□ Non-aerosol sprayer or pump bottle</td>
</tr>
<tr>
<td>□ Shampoo</td>
</tr>
<tr>
<td>□ Lotion or cream</td>
</tr>
<tr>
<td>□ Other (specify)</td>
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<tr>
<td>______________________</td>
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<tr>
<td><strong>DATES USED</strong></td>
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<tr>
<td>Product 1</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td><strong>BRAND &amp; PRODUCT NAME</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>EPA REG. NO.</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>□ EPA Reg No. known</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>WHO PUT IT ON THE PET?</strong></td>
</tr>
<tr>
<td>□ Male</td>
</tr>
<tr>
<td>□ Female</td>
</tr>
<tr>
<td>Age _____</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>CHOOSE 1 TYPE OF PRODUCT</strong></td>
</tr>
<tr>
<td>□ Spot-on drops</td>
</tr>
<tr>
<td>□ Size of container (oz.)</td>
</tr>
<tr>
<td>□ Flea collar</td>
</tr>
<tr>
<td>□ Flea powder</td>
</tr>
<tr>
<td>□ Size of container (oz.)</td>
</tr>
<tr>
<td>Amount used:</td>
</tr>
<tr>
<td>□ Spot treatment (small amount)</td>
</tr>
<tr>
<td>□ Half the container or less</td>
</tr>
<tr>
<td>□ More than half but not all</td>
</tr>
<tr>
<td>□ Entire container</td>
</tr>
<tr>
<td>□ Flea shampoo</td>
</tr>
<tr>
<td>□ Size of container (oz.)</td>
</tr>
<tr>
<td>Amount used:</td>
</tr>
<tr>
<td>□ Spot treatment (small amount)</td>
</tr>
<tr>
<td>□ Half the container or less</td>
</tr>
<tr>
<td>□ More than half but not all</td>
</tr>
<tr>
<td>□ Entire container</td>
</tr>
<tr>
<td>□ Flea spray</td>
</tr>
<tr>
<td>□ Size of container (oz.)</td>
</tr>
<tr>
<td>Amount used:</td>
</tr>
<tr>
<td>□ Spot treatment (small amount)</td>
</tr>
<tr>
<td>□ Half the container or less</td>
</tr>
<tr>
<td>□ More than half but not all</td>
</tr>
<tr>
<td>□ Entire container</td>
</tr>
<tr>
<td>□ Flea dip</td>
</tr>
<tr>
<td>Method of applying:</td>
</tr>
<tr>
<td>□ Cloth or sponge</td>
</tr>
<tr>
<td>□ Poured directly</td>
</tr>
<tr>
<td>□ Spray</td>
</tr>
<tr>
<td>□ ox of dip</td>
</tr>
<tr>
<td>□ ox of water</td>
</tr>
<tr>
<td>□ ox of mixture used</td>
</tr>
<tr>
<td>□ Other (specify)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong># OF PETS TREATED</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>DATES USED</strong></td>
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</tbody>
</table>
Findings from Round 2 Testing

- Overall, buckets worked well.
- Respondent issues:
  - Difficult reporting a product used on more than one person
  - Unsure how to report when a product was used more than once a day (e.g., bug spray)
<table>
<thead>
<tr>
<th>BRAND &amp; PRODUCT NAME</th>
<th>BRAND &amp; PRODUCT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EPA REG. NO.</th>
<th>EPA REG. NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- EPA Reg. No. unknown
- You can find the number in small print on the package.

**WHO WAS IT USED ON?**

- Male
- Female
- Age ______

- Did they apply it on themselves?
  - Yes
  - No

- If NO, who applied it?
  - Male
  - Female
  - Age ______

**CHOOSE 1 TYPE OF PRODUCT**

- Aerosol can
- Non-aerosol sprayer or pump bottle
- Shampoo
- Lotion or cream
- Other (specify)

**DATES USED**

- ___ / ___ / ___
- ___ / ___ / ___
- ___ / ___ / ___
- ___ / ___ / ___
- ___ / ___ / ___

**WHO WAS IT USED ON?**

1. **Person 1**
   - Male
   - Age _____
   - Total times used _____

2. **Person 2**
   - Male
   - Age _____
   - Total times used _____

3. **Person 3**
   - Male
   - Age _____
   - Total times used _____

4. **Person 4**
   - Male
   - Age _____
   - Total times used _____

5. **Person 5**
   - Male
   - Age _____
   - Total times used _____

6. **Person 6**
   - Male
   - Age _____
   - Total times used _____
More Findings from Round 2 Testing

Respondents were unable to answer detailed questions about insecticides applied by professionals and landlords:

- True of both homeowners and renters
- Respondents often guessed at the product used or answered “Don’t know”
Additional Bucket

What Do I Do?

For the next three months, fill out a log entry for each and every time you use an insecticide.

An insecticide is a product used to control insects. Insecticides are used in homes, yards, gardens, as well as on pets and people.

INCLUDE

- Sprays or bait to treat roaches, ants, termites, or other bugs in your home
- Sprays, creams, lotions, or shampoos that you put on your body to prevent mosquito or other bug bites or to treat for lice
- “Dust” or other insecticides for flower or vegetable gardens
- Insecticide granules or powder applied to grass or lawns
- Sprays, powders, spot-on products or collars to prevent or kill fleas and ticks on your pet

DON'T INCLUDE

- Weed killers
- Products to control rodents such as mice, rats, or squirrels
- Disinfectants

IF YOU USE AN INSECTICIDE ON A PERSON

Go to page 4

IF YOU USE AN INSECTICIDE ON A PET

Go to page 6

IF A PROFESSIONAL, LANDSCAPER, OR LANDLORD USES AN INSECTICIDE IN YOUR HOME OR YARD

Go to page 8

IF YOU USE AN INSECTICIDE IN YOUR HOME OR YARD

Go to the log entries beginning on page 10
### Survey of Home Insecticide Use | Log for Months 1-3

Please fill out the information below for each time a professional, landscaper, or landlord uses an insecticide in your home, yard, or garden.

#### Visit 1

<table>
<thead>
<tr>
<th>DATE OF VISIT</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFESSIONAL OR LANDLORD CONTACT INFORMATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone number</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Address</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>City</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>Zip</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Reason for Application

#### How Soon Did You or Others Come in Contact with the Treated Space?

- Immediately
- Less than one hour
- One to 4 hours
- More than 4 hours
- Don't know
<table>
<thead>
<tr>
<th>TYPE OF PRODUCT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aerosol can</strong></td>
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</tr>
<tr>
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<tr>
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<td></td>
</tr>
<tr>
<td><strong>Bait station, trap, or fly strip</strong></td>
<td></td>
</tr>
<tr>
<td>Number used</td>
<td></td>
</tr>
<tr>
<td><strong>Candles or coil</strong></td>
<td></td>
</tr>
<tr>
<td>Number used</td>
<td></td>
</tr>
<tr>
<td>Time used:</td>
<td></td>
</tr>
<tr>
<td>□ Less than 1 hour</td>
<td></td>
</tr>
<tr>
<td>□ 1 to 2 hours</td>
<td></td>
</tr>
<tr>
<td>□ More than 2 hours</td>
<td></td>
</tr>
<tr>
<td><strong>Concentrate</strong></td>
<td></td>
</tr>
<tr>
<td>□ Powder</td>
<td></td>
</tr>
<tr>
<td>□ Liquid</td>
<td></td>
</tr>
<tr>
<td>□ Other</td>
<td></td>
</tr>
<tr>
<td>Ounces of concentrate used</td>
<td></td>
</tr>
<tr>
<td>Amount of water mixed with concentrate</td>
<td></td>
</tr>
<tr>
<td>□ Ounces</td>
<td></td>
</tr>
<tr>
<td>□ Gallons</td>
<td></td>
</tr>
<tr>
<td>□ Don't know</td>
<td></td>
</tr>
<tr>
<td>Amount of mixture used:</td>
<td></td>
</tr>
<tr>
<td>□ Half the mixture or less</td>
<td></td>
</tr>
<tr>
<td>□ More than half but not all</td>
<td></td>
</tr>
<tr>
<td>□ Entire mixture</td>
<td></td>
</tr>
<tr>
<td>Square feet covered</td>
<td></td>
</tr>
<tr>
<td>Method of applying:</td>
<td></td>
</tr>
<tr>
<td>□ Trigger or pump sprayer</td>
<td></td>
</tr>
<tr>
<td>□ Hose end sprayer</td>
<td></td>
</tr>
<tr>
<td>□ Something else</td>
<td></td>
</tr>
<tr>
<td><strong>Fogger</strong></td>
<td></td>
</tr>
<tr>
<td>Size of container (in ounces)</td>
<td></td>
</tr>
<tr>
<td>Number of foggers used</td>
<td></td>
</tr>
<tr>
<td>Number of rooms treated</td>
<td></td>
</tr>
<tr>
<td><strong>Granules, dust, powder, or pellets</strong></td>
<td></td>
</tr>
<tr>
<td>Size of container (in ounces)</td>
<td></td>
</tr>
<tr>
<td>Amount used:</td>
<td></td>
</tr>
<tr>
<td>□ Spot treatment (small amount)</td>
<td></td>
</tr>
<tr>
<td>□ Half the container or less</td>
<td></td>
</tr>
<tr>
<td>□ More than half but not all</td>
<td></td>
</tr>
<tr>
<td>□ Entire container</td>
<td></td>
</tr>
<tr>
<td>Method of applying:</td>
<td></td>
</tr>
<tr>
<td>□ Handheld spreader</td>
<td></td>
</tr>
<tr>
<td>□ Walk behind or “push” spreader</td>
<td></td>
</tr>
<tr>
<td>□ Spread directly from container</td>
<td></td>
</tr>
<tr>
<td>□ Something else</td>
<td></td>
</tr>
<tr>
<td><strong>Non-aerosol sprayer or pump bottle</strong></td>
<td></td>
</tr>
<tr>
<td>Size of container (in ounces)</td>
<td></td>
</tr>
<tr>
<td>Amount used:</td>
<td></td>
</tr>
<tr>
<td>□ Spot treatment (small amount)</td>
<td></td>
</tr>
<tr>
<td>□ Half the container or less</td>
<td></td>
</tr>
<tr>
<td>□ More than half but not all</td>
<td></td>
</tr>
<tr>
<td>□ Entire container</td>
<td></td>
</tr>
<tr>
<td><strong>Shampoo</strong></td>
<td></td>
</tr>
<tr>
<td>Size of container (in ounces)</td>
<td></td>
</tr>
<tr>
<td>Amount used:</td>
<td></td>
</tr>
<tr>
<td>□ Spot treatment (small amount)</td>
<td></td>
</tr>
<tr>
<td>□ Half the container or less</td>
<td></td>
</tr>
<tr>
<td>□ More than half but not all</td>
<td></td>
</tr>
<tr>
<td>□ Entire container</td>
<td></td>
</tr>
<tr>
<td><strong>Spot-on drops for pets</strong></td>
<td></td>
</tr>
<tr>
<td>Size of container (in ounces)</td>
<td></td>
</tr>
<tr>
<td><strong>Flea collar for pet</strong></td>
<td></td>
</tr>
<tr>
<td>Number of pets with collars</td>
<td></td>
</tr>
<tr>
<td>□ Something else</td>
<td></td>
</tr>
</tbody>
</table>
Findings from Round 1 Testing

• Most icons worked well.

• Respondent issues:
  – Reported foggers under the aerosol can section
  – Misinterpreted the concentrate section to refer to liquid products with “concentrate” or “concentrated” on the label
Fogger Icon

- **Fogger**
  - Size of container (in ounces) 
  - Number of foggers used 
  - Number of rooms treated

- **Fogger or bomb**
  - Size of container (oz.) 
  - Number of foggers used 
  - Number of rooms treated
Findings from Round 2 Testing

- Icons worked as intended
Instructions
Log Instructions

What should I include in my log?
This log asks about insecticides that have been used in your home, in your yard or garden, including ones used on a pet or person. Insecticides are used to control insects, such as roaches or ants infesting your kitchen, termites causing damage to your home, fleas on your dog and cat, or mosquitoes while you’re in your yard. They do not include products used to control pests that are not insects, such as weeds or rodents.

How often should I fill out the log?
We want to know about every time an insecticide is used in your home, yard, or garden, or on a pet or person. If someone puts an insecticide on your lawn – that’s one log entry. The following month when they do it again, that is a second entry. If someone treats the kitchen for ants, that’s another log entry.

It’s easiest and most accurate if you fill out the log every time you use an insecticide. We will send you a reminder.

What if I don’t use any insecticides during these 3 months?
Even if you haven’t used an insecticide product in your home, yard, or garden or on a pet or person, please return the log. Check the box on the back cover to let us know you haven’t used any insecticides during this time.

What if someone else uses an insecticide in my home?
If a landlord, building manager, landscaper, or pest control specialist applies an insecticide, please tell us about it. Sometimes, a receipt or letter provides information on what insecticides were applied. If you don’t know what insecticides were used, please provide the contact information for the professional applicator, the date of service, and the reason for the application, if known.

Where do I find the EPA Reg. No.?
The EPA Registration Number can be found on the package or container. It is a string of numbers following the words “EPA Reg. No.” The EPA Reg. No. will not contain any letters.

For the next three months, fill out a log entry for each and every time you use an insecticide.

INCLUDE

• Sprays or bait to treat roaches, ants, or other bugs in your home
• Sprays, creams, or lotions that you put on your body to prevent mosquito or other bug bites
• “Dust” or other pesticides for flower or vegetable gardens
• Insecticide granules or powder applied to grass or lawns
• Sprays, powders, spot-on products, or collars to prevent or kill fleas or ticks on your pet

DON’T INCLUDE

• Weed killers
• Rodent control
• Disinfectants
Findings from Round 1 Testing

Respondents often did not read the instructions

- Missed important points, such as:
  - instruction to complete an entry for each and every application
  - what counts as an insect (e.g., *not* rodents)
  - what to do if no insecticides were used
  - what to do if need additional logs
What Do I Do?

For the next three months, fill out a log entry for each and every time you use an insecticide.

An insecticide is a product used to control insects. Insecticides are used in homes, yards, gardens, as well as on pets and people.

**INCLUDE**
- Sprays or bait to treat roaches, ants, termites, or other bugs in your home
- Sprays, creams, lotions, or shampoos that you put on your body to prevent mosquito or other bug bites or to treat for lice
- Dust or other insecticides for flower or vegetable gardens
- Insecticide granules or powder applied to grass or lawns
- Sprays, powders, spot-on products, or collars to prevent or kill fleas or ticks on your pet

**DON’T INCLUDE**
- Weed killers
- Rodent control
- Disinfectants

**IF YOU USE AN INSECTICIDE ON A PERSON**
Go to page 4

**IF YOU USE AN INSECTICIDE ON A PET**
Go to page 6

**IF A PROFESSIONAL LANDSCAPER, OR LANDLORD USES AN INSECTICIDE IN YOUR HOME OR YARD**
Go to page 8

**IF YOU USE AN INSECTICIDE IN YOUR HOME OR YARD**
Go to the log entries beginning on page 10

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The EPA Registration Number can be difficult to find, but it is very important. It tells us exactly what insecticides were used. It is usually on the outside of the package in small print. It is a string of numbers following the words "EPA Reg. No." It will not contain any letters.

The log asks if you have used any insecticides during these 3 months.
We still want to know. It’s important for us to know when insecticides aren’t used.

- If you haven’t used any insecticides, please check this box and send back the log at the end of the 3 months.
Log Instructions

What should I include in my log?
This log asks about insecticides that have been used in your home, yard, or garden, including those used on a pet or person. Include insecticides used to control insects, such as roaches or ants infesting your kitchen, termite造成 damage to your home, and pests on your dog or cat, or mosquitoes while you’re in your yard. They do not cover products used to control pests that are not insects, such as weeds or robins.

How often should I fill out the log?
We want to know about every time an insecticide is used in your home, yard, or garden, or on a pet or person. If someone puts an insecticide on your lawn—and that’s one log entry. The following month when they do it again, that is a second log entry. If someone treats the kitchen for ants, that’s another log entry.

It’s easiest and most accurate if you fill out the log every time you use an insecticide. We will need you to remember this.

What if I don’t use any insecticides during these 3 months?
Even if you haven’t used an insecticide product in your home, yard, or garden, or on a pet or person, please return the log. Check the box on the back cover to let us know you haven’t used any insecticides during this time.

What if someone else uses an insecticide in my home?
If a landlord, building manager, landscaper, or pest control service applied an insecticide, please tell us about it. Sometimes, a receipt or letter provides information on what insecticides were applied. If you don’t know what insecticides were used, provide the contact information for the professional applicator, the date of service, and the reason for the application, if known.

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INCLUDE
• Sprays or bait to treat roaches, ants, or other bugs in your home
• Sprays, creams, or lotions that you put on your body to prevent mosquito or other bug bites
• “Dust” or other pesticides for flower or vegetable gardens
• Insecticide granules or powder applied to grass or lawns
• Sprays, powders, spot-on products, or collars to prevent or kill fleas or ticks on your pet

DON’T INCLUDE
• Weed killers
• Rodent control
• Disinfectants

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• “Dust” or other insecticides for flower or vegetable gardens
• Insecticide granules or powder applied to grass or lawns
• Sprays, powders, spot-on products, or collars to prevent or kill fleas or ticks on your pet

DON’T INCLUDE
• Weed killers
• Products to control rodents such as mice, rats, or squirrels
• Disinfectants

What if I don’t use any insecticides during these 3 months?
Even if you haven’t used an insecticide product in your home, yard, or garden, please fill out the log. Check the box on the back cover to let us know you haven’t used any insecticides during this time.

What if someone else uses an insecticide in my home?
If a landlord, boarding manager, landscaper, or pest control service applies an insecticide, please tell us about it. Sometimes a concept or letter provides information on what insecticides were applied. If you don’t know what insecticides were used, please provide the contact information for the professional applicator; the date of service, and the reason for the application, if known.

Where do I find the EPA Reg. No.?
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We still want to know. It’s important for us to know when insecticides aren’t used.

☐ If you haven’t used any insecticides, please check this box and send back the log at the end of the 3 months.
Log Instructions

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If you haven’t used any insecticides, please check this box and send back the log at the end of the 3 months.
Findings from Round 2 Testing

Respondents read instructions more often and were much more likely to remember vital information

- One respondent defined a mouse as an insect, so we added examples of rodents to the exclusion list

![Exclusion List Image]
Takeaways

- Design does impact respondents’ ability to report data correctly
- Color & icons matter
- Simplifying instructions is best
- Some information needs to be repeated everywhere
Final Thoughts

- The complexity of survey diaries require a great deal of expertise to design
  - Combined expertise of three survey methodologists (one of whom was also a usability expert) and graphic designer was key

- Iterative testing is important
  - Even with a strong initial design, two rounds of cognitive testing still revealed significant issues
References


