

## “Getting the Lead Out” in Hartford, Connecticut: A Multifaceted Lead-Poisoning Awareness Campaign

Tara McLaughlin,<sup>1</sup> Owen Humphries, Jr.,<sup>2</sup> Tung Nguyen,<sup>2</sup> Rose Maljanian,<sup>1</sup> and Katherine McCormack<sup>2</sup>

<sup>1</sup>Institute for Outcomes Research and Evaluation at Hartford Hospital, Hartford, Connecticut, USA; <sup>2</sup>City of Hartford Department of Health and Human Services, Hartford, Connecticut, USA

As part of a citywide effort to increase lead poisoning awareness within the city of Hartford, Connecticut, the Hartford Health Department implemented a multifaceted public health campaign involving several novel elements and partnerships, including the use of municipal sanitation trucks to disseminate lead-poisoning prevention messages throughout the city. To evaluate campaign reach and effectiveness, Health Department personnel collected measures of lead-poisoning knowledge, recall of campaign components, and reports of steps taken to prevent lead poisoning from 180 largely ethnic minority parents of preschool-age children. Key results were as follows: *a*) Recall of campaign components ranged from 21.5 to 62.6%, with newspaper advertisements and signs on buses and billboards recalled most often and a video broadcast on public-access television recalled least often. *b*) More than 45% of respondents reported that they took steps to prevent lead poisoning because of at least one of the campaign components, with the newspaper advertisements being the most effective component in terms of prompting lead-poisoning prevention behavior. *c*) Respondents' awareness was particularly low in terms of how medical personnel and procedures can and cannot detect and prevent lead poisoning in children. This campaign prompted caregivers to take steps to prevent lead poisoning and may help public health professionals in other communities to develop novel ideas through which to embark on similar initiatives. *Key words:* childhood health, community health, lead poisoning awareness, public health campaigns, urban health. *Environ Health Perspect* 112:1–5 (2004). doi:10.1289/ehp.6391 available via <http://dx.doi.org/> [Online 29 September 2003]

The effects of lead poisoning in children have been widely documented. Long-term effects include deficits in IQ, disorders of attention, and impairment of fine and gross motor skills [reviewed by Ellis and Kane (2000)]. Children from low-income families living in urban environments are at particularly high risk for lead exposure and its sequelae (Pirkle et al. 1994). According to the 1990 U.S. Census, the city of Hartford ranked first in the state of Connecticut for several lead-poisoning risk factors, including number of children younger than 6 years, rates of children living in poverty, and percentage of at-risk housing (i.e., housing built before 1978, particularly before 1950; U.S. Bureau of the Census 1990). In 1993, the Hartford Health Department collaborated with area hospitals, community-based organizations, city and state health departments, and the University of Connecticut School of Medicine to create a coalition—Hartford's Community Health Partnership—to improve public health within the city.

As part of these improvement efforts, and in response to the earlier evidence of lead risk factors in Hartford, the Hartford Health Department, the Hartford Regional Lead Treatment Center, and the Hartford Lead Safe House established a Lead Poisoning Prevention and Education Program in 1999. This program, funded by the Centers for Disease Control and Prevention, the U.S. Department of Housing and Urban Development, the Connecticut Department of Public Health, and

the U.S. Environmental Protection Agency (U.S. EPA), aimed to increase awareness of lead poisoning and foster behaviors leading to lead-poisoning prevention among the residents of Hartford. According to the most recent available estimates (Connecticut Department of Public Health 2000), the rate of elevated blood lead levels ( $\geq 10 \mu\text{g}/\text{dL}$ ) among children between 1 and 2 years of age in the city of Hartford was approximately 1.80 times higher than the rate among children in these age groups for the state of Connecticut overall, thus indicating a strong need for this kind of a program.

In this report we describe the multifaceted public awareness campaign implemented in the city of Hartford as part of the Lead Poisoning Prevention and Education Program and present evidence of its reach and effectiveness within the community. The campaign was designed to use public spaces in novel ways and to take advantage of opportunities to disseminate public health information that are often overlooked. This campaign involved 10 key components, described below.

**Educational video.** In 1999, the Hartford Health Department produced a video titled *A Perfect Partnership*, which has aired numerous times on public access television and is also available at all 10 of the city's public libraries. The video aims to increase lead poisoning awareness and describes the partnerships that have been established in the city of Hartford between the public and private sectors to

increase awareness, reduce risks, and provide services to children and families that have been affected by lead poisoning.

**Children's art display at the state capital.** In October 1999, the Hartford Health Department and the Connecticut Department of Public Health coordinated an artwork display at the state capitol building featuring drawings depicting the hazards of lead poisoning that were chosen from the entries in a lead poisoning prevention poster contest held for students of Hartford's elementary schools.

**Local hardware store educational display.** In conjunction with the U.S. EPA's "Keep It Clean" campaign, the Hartford Health Department displayed an educational table in front of a local Hartford hardware store from March through April in 2000 and 2001. The goal was to reach patrons and pedestrians with messages about lead poisoning and lead-safe work practices and to inform residents that further information could be obtained at the Hartford Health Department.

**Newspaper advertisements.** The Hartford Health Department ran four educational advertisements (ads) highlighting lead poisoning prevention in Connecticut's major newspaper and in two smaller, local Hartford newspapers from 1 April 2000 to 30 June 2000. The ads targeted different segments of the population, including grandparents and contractors. An example of one of the ads featured two African-American boys and encouraged readers to have their children and homes tested for lead. The ad included phone numbers for both the Hartford Health Department and the Connecticut Children's Medical Center.

**Billboards.** From April 2000 through April 2001, the Hartford Health Department

---

Address correspondence to T. McLaughlin, Hartford Hospital Research Program, 80 Seymour Street, P.O. Box 5037, Hartford, CT 06102-5037 USA. Telephone: (860) 545-5065. Fax: (860) 545-5112. E-mail: [tmclaugh@hartosp.org](mailto:tmclaugh@hartosp.org)

We thank E. O'Keefe for her previous work on the questionnaire, the City of Hartford Department of Human Services Day Care Administration, the senior teachers, the Centers for Disease Control and Prevention (Atlanta, GA), the Department of Housing and Urban Development (Washington, DC), the Connecticut Department of Public Health, and the U.S. Environmental Protection Agency (Boston, MA) for their support.

The authors declare they have no competing financial interests.

Received 16 April 2003; accepted 29 September 2003.

posted an educational awareness message in English and in Spanish on 16 Hartford billboards. These message feature a woman playing with a child along with the phrase, "He got his eyes from Grandma, his laugh from Daddy, and his lead poisoning from home." Since their initial run, these billboards have continued to be posted throughout the city.

**Milk carton campaign.** In May 2000, the Hartford Health Department partnered with a local dairy to place lead awareness messages on almost one million milk cartons distributed throughout Connecticut, Rhode Island, Westchester County in New York, and western Massachusetts. These ads featured drawings of children along with the phrase "One good reason to prevent lead poisoning."

**Signs on city buses and bus shelters.** During May 2000 the Hartford Health Department partnered with the Connecticut Transit Authority to place educational signs on the interiors of 120 city buses, on the exterior bus-tails of 20 additional buses, and on the walls of five of the city's bus shelters. These signs, posted in English and in Spanish, address the hazards of lead poisoning and stress the importance of having children tested. They continue to be posted on buses throughout the city.

**Signs on municipal sanitation trucks.** Beginning in January 2001, the Hartford Health Department mounted a series of 4-ft × 8-ft lead poisoning awareness signs on the sides of Hartford's 13 municipal sanitation trucks (Figure 1). The signs convey the same message as the billboard and were posted in both English and Spanish. To our knowledge, this campaign represented the first time in the United States that municipal sanitation trucks had been used to promote awareness of childhood lead poisoning. These signs continue to be posted on sanitation trucks throughout the city.

**Orange juice carton campaign.** In September 2001, the Hartford Health Department partnered with a local dairy to print lead awareness messages on the sides of approximately 300,000 orange juice cartons that were distributed throughout four northeastern states, including Connecticut. This campaign was patterned after the milk carton campaign that had run in May 2000 and included similar pictures and messages.

**Prevent-lead-poisoning postmark.** The city of Hartford collaborated with the U.S. Postal Service and the U.S. Department of Housing and Urban Development to implement, for the first time in the United States, a die-hub cancellation postmark aimed at the prevention of lead poisoning. This postmark was applied to virtually every stamped, first-class card and letter mailed in Connecticut during October 2001. The postmark featured an illustration of a house accompanied by the phrase "Let's give every child a lead safe home."

All components of the campaign (except for the postmark) featured a number to call at the Hartford Health Department to learn more about lead poisoning.

### Campaign Evaluation

To evaluate the reach and effectiveness of this campaign and to determine which component seemed to be the most successful in terms of these end points, we designed an anonymous questionnaire and worked with Hartford Health Department personnel to distribute it to all nine of the city-run early learning centers (ELCs; i.e., day care centers) within the city of Hartford. ELC staff distributed this questionnaire in February 2002 to all clients either picking up or dropping off children at their facilities. In exchange for the staff's assistance in the administration of this project, the Hartford Health Department purchased educational literature for use by the children at each of the ELCs. We focused on caregivers and others involved with preschool-age children because children of this age are the most vulnerable to the effects of lead poisoning. At the time of the study, the clientele of the city-run ELCs was composed of approximately 272 caretakers (representing ~286 enrolled children).

The questionnaire that we used was composed of four sections (Appendix 1). One section included a series of true/false questions assessing various aspects of general lead-poisoning knowledge. These items were adapted from existing health education materials that were in use by the Hartford Health Department and had previously been researched and developed by the Connecticut Citizen Research Group (Hartford, CT) and the Hartford Regional Lead Treatment Center. We sought to address lead poisoning knowledge as part of this evaluation because previous studies have illustrated that, although caregivers may be aware of risks associated with lead poisoning, their awareness of possible ways to prevent it is often lower (Mahon 1997; Mehta and Binns 1998; Polivka 1999; Porter and Severtson 2000).

A second section of the questionnaire addressed the reach of each of the campaign components. Respondents were asked to indicate whether or not they remembered ever seeing each of these components. A third section addressed the effectiveness of each of the components. Respondents were asked to indicate whether or not they had taken specific steps to learn about or prevent lead poisoning in the past year and whether or not they had taken these steps because they saw or heard one of the campaign components. Those answering yes were then asked to indicate which component(s) prompted them to take these steps. A fourth section included demographic information such as respondent ethnicity, age, relationship to the child or children involved, number of children

that respondent had, age of the children, and total annual income. The items included in the questionnaire are presented in Appendix 1.

### Evaluation Results

We received questionnaires back from 180 respondents (~66% of the total clientele). More than 85% of respondents were black (i.e., of African, Caribbean, or Virgin Island descent) or Hispanic. Approximately three-quarters of the surveys were completed by the mothers of the children in these facilities, with approximately 9% being completed by fathers. The age of respondents ranged from 16 to 62 years (the average age was ~30 years). The respondents' income ranged from < \$5,000/year to > \$40,000/year, with almost half of the sample reporting a yearly income of between \$15,000 and \$29,999.00. On average, respondents reported two children per household.

**Lead poisoning knowledge.** The specific items that were used to assess lead poisoning knowledge and the percentages of respondents answering "true" to each are presented in Table 1. We noted that knowledge in our sample was particularly low regarding the facts that *a*) some folk remedies may pose lead poisoning hazards and *b*) lead exposure can be reduced by using cold water for cooking and drinking. It was particularly notable that 96% of respondents incorrectly endorsed immunization as a way to prevent lead poisoning in children. More than 60% of respondents indicated that they believed, incorrectly, that lead poisoning can be "easily detected by having a doctor examine the child." We also noted that certain aspects of lead poisoning knowledge varied according to income. For example, those respondents earning > \$30,000/year were significantly less likely ( $p < 0.05$ ) than the other groups to indicate (incorrectly) that immunization is one way to reduce the risk of lead poisoning in children.

**Campaign reach.** The percentages of respondents reporting recall of each of the campaign components are presented in Table 2. Recall of campaign components ranged from a high of 62.6% for the newspaper advertisements to a low of 21.5% for



**Figure 1.** Sanitation truck equipped with lead poisoning awareness message. Photo by Owen Humphries.

the video. The ranking of the campaign components, from highest to lowest percent recall, was as follows: newspaper advertisements, signage on buses, billboards, signage on sanitation trucks, display at store, advertisements on milk/juice container, postmark, art display, and video. Interestingly, when campaign reach was assessed across four age groups (16–24, 25–29, 30–39, and 40–62 years), respondents who were 40–62 years of age were the most likely to report recall of the video. We noted that 45% of the respondents in this age group recalled

the video (compared with 37.2, 17.4, and 18.0% for the other age groups, respectively; proportions differed significantly at  $p < 0.05$ ).

**Steps taken to learn about or prevent lead poisoning.** The percentages of respondents who reported having taken specific steps in the past year to learn about or prevent lead poisoning are presented in Table 3. More than 60% reported that they spoke to their landlord about lead hazards; more than half reported that they had asked a doctor about testing and that they had changed the way

that they cooked or cleaned to prevent lead poisoning. We noted that steps taken did not vary much according to ethnicity. The only observed difference was that Hispanic respondents were more likely than blacks to report that they had changed the way they cooked or cleaned in order to prevent lead poisoning (63.93% vs. 45.35%, respectively;  $p < 0.05$ ).

**Campaign effectiveness.** Approximately 45% (75) of the respondents reported that they took specific steps to learn more about or prevent lead poisoning because of at least one of the components of the campaign described above. Out of these 75 respondents, 55 (73.3%) reported that they had asked their doctor about blood tests for lead poisoning, 16 (21.3%) reported that they had called a phone number to learn more about lead poisoning, 57 (76%) reported that they had changed the way they cooked or cleaned, 32 (42.7%) reported that they changed the kinds of foods they feed their families, 31 (41.3%) reported that they spoke to their landlord, and 45 (60%) reported that they took other steps to prevent lead poisoning. Among those reporting that they took specific steps to learn more about or prevent lead poisoning, approximately 51% indicated that they took steps because of the newspaper advertisements, 34.7% were prompted by a billboard, 24.3% were prompted by a sign on a bus or bus shelter, 13.5% were prompted by a sign on a sanitation truck, 12.2% were prompted by the video, 11% were prompted by the hardware store display, and approximately 7% were prompted by either the postmark or the artwork display. Thus, the newspaper advertisements comprised the most effective component of the campaign in terms of self-reported lead-poisoning prevention behavior.

### Conclusions

In this study we evaluated the reach and effectiveness of the various components of the Hartford Health Department's lead awareness campaign within a sample of primarily urban parents of preschool-age children. Two of the components, the die-hub postmark and the signage on the sanitation trucks, were, to our knowledge, the first of their kind in terms of use in a U.S. lead-poisoning awareness campaign. Although these components were novel, the more traditional approach of using newspaper advertisements to disseminate campaign messages was the most effective component in terms of reach and in terms of prompting respondents to take steps toward preventing lead poisoning. It is notable that the other more traditional approach of using billboards was almost as effective as the newspaper advertising in terms of percent recall.

Regarding the effectiveness of the newspaper advertising, the advertisements assessed in this evaluation were run in two of Hartford's

**Table 1.** Lead poisoning knowledge.<sup>a</sup>

Items	Percent answering "true" (n)
Sources of lead exposure to children in the home	
Dust and paint chips from peeling paint	70.3 (172)
Drinking water from pipes containing lead	67.1 (167)
Dirt and dust from hallways	40.6 (165)
Window mini-blinds pre-1996	45.7 (162)
Some folk remedies	21.0 (162)
Glaze on imported pottery/porcelain	40.5 (163)
Groups at greatest risk of lead poisoning	
Children < 6 years old	94.8 (172)
Children 6–12 years old	58.4 (154)
Pregnant women	62.8 (156)
Things to do to reduce risk of lead exposure	
Use cold water for cooking/drinking	66.2 (157)
Wash child's hands before eating	95.9 (170)
Dust and sweep home often	93.4 (167)
Wet-mop sills/wells with cleaner	84.3 (166)
Make sure children get "shots"	95.9 (169)
Wash toys once a week	78.1 (169)
Ways lead poisoning can affect a child	
Slow development	93.0 (171)
Cause behavioral problems	82.1 (168)
Cause learning difficulties in school	87.0 (169)
How lead poisoning can be easily detected	
A doctor examining a child	61.8 (170)
Blood test only way to detect lead poisoning	95.8 (168)

Figures in parentheses indicate the numbers of respondents providing data for each item. See Appendix 1 for more complete information.

<sup>a</sup>All items are "true" except for "Lead poisoning can be easily detected by doctor examining child," "Children 6–12," and "Make sure children get shots."

**Table 2.** Campaign reach.

Component	Percent reporting recall (n)
Newspaper advertisements	62.6 (171)
Sign on bus/bus stop	60.3 (174)
Billboard	60.0 (175)
Sign on sanitation truck	40.1 (172)
Display at store	36.8 (171)
Ad on milk/orange juice container	28.7 (171)
Postmark	22.4 (174)
Art display	25.1 (171)
Video	21.5 (172)

Figures in parentheses represent the number of respondents providing data on each item.

**Table 3.** Steps taken to learn about or prevent lead poisoning.

Step	Percent reporting each step (n)
Spoke to landlord	65.1 (86)
Asked doctor about testing	57.6 (172)
Changed way I cook/clean	53.5 (170)
Took steps due to messages	47.2 (159)
Changed the kinds of foods I serve my family	29.6 (152)
Called phone number on sign/ad	14.7 (170)
Took other steps	40.4 (161)

Figures in parentheses represent the number of respondents providing data on each item.

local newspapers as well as Connecticut's main newspaper. These local newspapers are widely read for several reasons. First, they are free and readily available throughout the city in public spaces such as libraries and municipal buildings. Second, they provide neighborhood-specific information on local events and political issues. For these reasons, many residents have a high loyalty to these neighborhood newspapers. Although we did not collect data on the exact newspaper in which respondents remembered seeing the advertisements, this strong resident loyalty to the local newspapers may help explain why the newspaper advertisements were one of the most successful components of the campaign. These results suggest that public health officials in other communities who are planning similar campaigns may wish to take advantage of the popularity and accessibility of local neighborhood newspapers in disseminating their public health messages.

We also noted that the signs on the buses and bus shelters were almost as widely recalled as the newspaper ads. The signage on the sanitation trucks, however, was less widely recalled. This discrepancy may be due to the degree to which riders on the bus and motorists on the city streets constitute a more "captive audience" for messages posted on city buses and bus shelters than would individuals noticing a sanitation truck while walking or driving down a street. The signs on the inside of the buses and bus shelters were highly visible to those using the bus, whereas the signs on the backs of the buses were highly visible to motorists "stuck" behind the buses. In contrast, the signage on the sides of the sanitation trucks was probably visible to a given individual for a shorter duration of time.

Although the signage on the sanitation trucks was recalled less often than the newspaper ads and less often than the signage on the buses and the billboards, it was recalled more frequently than the display at the hardware store, the ads on the milk and juice containers, the art display, or the video. The use of sanitation trucks to disseminate public health messages had two advantages in this campaign. First, Hartford's sanitation trucks constitute a form of ubiquitous public space that is not generally used for message dissemination and is generally not in demand for this purpose. Therefore, the Hartford Health Department was able to keep the signage in place for prolonged periods of time. Second, the cost involved in using this public space was minimal beyond the production of the signage itself. This project has illustrated how this kind of space can be used as a low-cost component of a broad-based public health initiative.

Several components of the campaign were less accessible to the general public and were recalled much less often than the newspaper advertisements, billboards, and vehicle signage.

The video, which was televised on Hartford's public access television station and which is also available at the public libraries, was recalled most often by respondents  $\geq 40$  years of age, suggesting that public health professionals may want to consider using public access television in campaigns targeting this demographic group. The art display, the postmark, and the signs on the milk and juice containers were each accessible for 1 month, in contrast to the vehicle signage, which was visible on a more continuous basis throughout the city. Therefore, there was a much shorter window of opportunity to reach residents through these media.

A second line of inquiry in this evaluation focused on the degree to which this sample of Hartford caretakers of preschool-age children are knowledgeable about various aspects of lead poisoning. The emergent picture indicates that knowledge needs to be strengthened in at least two specific areas involving *a*) the fact that childhood immunization does not prevent lead poisoning and *b*) the fact that lead poisoning cannot be easily detected through a doctor's examination. Regarding immunization, the Hartford Health Department has made a very strong effort to increase immunization rates among children living in the city of Hartford, and Hartford Health Department officials currently estimate that the rate of immunization among Hartford children is approximately 89%. These results suggest that perhaps these caretakers have been the recipients of many different kinds of public health information and that they may have subsequently become confused. Although the importance of immunization per se has been widely advertised, these results suggest that health education efforts are needed to delineate clearly the specific conditions against which immunizations can and cannot protect children. Perhaps "teachable moments" may occur during the immunization process when health education materials may be offered to parents to encourage lead screening.

During the preparation of this report, the Hartford Health Department merged with the Hartford Department of Human Services into a combined Department of Health and Human Services. This combined department continues to use many of the components of this campaign to disseminate information on lead poisoning as well as other public health issues. Sanitation trucks continue to carry lead poisoning awareness messages throughout the city. The die-hub cancellation postmark will be used again in October 2003 to raise awareness of lead poisoning on all cards and letters mailed in Connecticut. The department also plans to rerun the newspaper advertisements and is currently using city buses and billboards to disseminate information on asthma prevention. The department has also begun to use other forms of public space to disseminate lead awareness messages. For example, reflective signs reading

"Prevent Lead Poisoning" have been mounted on city signposts. A mural addressing lead poisoning prevention has been hung outside on a Hartford Parking Authority garage and one is now on permanent display at the Connecticut Children's Medical Center. A collaboration between the Hartford Department of Health and Human Services and six local McDonald's restaurants has led to the creation of visual displays within these restaurants that educate parents and property owners on how to recognize lead hazards. Finally, two projects are currently in the planning phase. One involves the creation of a children's book on lead poisoning prevention, and the other involves the renovation of a bus to be used as a mobile environmental health classroom.

We hope that the campaign described in this report will serve as a springboard from which readers will develop their own ideas of how public spaces in their communities may be used in novel ways to disseminate health awareness messages. Further information regarding the evaluation described in this report may be found at Hartford's Community Health Partnership (City of Hartford 2003). Information on the video *A Perfect Partnership* (including contact information for review copies), as well as information on other activities described in this report, may be found at Hartford's environmental health website (City of Hartford 2001). We welcome and encourage correspondence from individuals involved in similar public health initiatives within other communities.

## REFERENCES

- Alicea E, Valico S, Allen T. 1998. All About Lead Poisoning: An Outreach Handbook. Hartford, CT:Connecticut Research Group and Hartford Regional Lead Treatment Program.
- City of Hartford. 2001. Hartford: Your Health and Your Environment. Hartford, CT:Hartford Department of Health and Human Services. Available: <http://healthy.hartford.gov> [accessed 27 October 2003].
- City of Hartford. 2003. Hartford's Community Health Partnership. Hartford, CT:Hartford Department of Health and Human Services. Available: <http://www.hchp.org> [accessed 27 October 2003].
- Connecticut Department of Public Health. 2000. Childhood Lead Poisoning Prevention Program. Hartford, CT:Connecticut Department of Public Health.
- Ellis MR, Kane KY. 2000. Lightening the lead load in children. *Am Fam Physician* 62(3):545-554, 559-600.
- Mahon I. 1997. Caregiver's knowledge and perceptions of preventing childhood lead poisoning. *Public Health Nurs* 14:169-182.
- Mehta S, Binns HJ. 1998. What do parents know about lead poisoning? The Chicago Lead Knowledge Test. *Pediatric Practice Research Group. Arch Pediatr Adolesc Med* 152:1213-1218.
- Pirkle J, Brody D, Gunter E, Kramer R, Paschal D, Flegal K. 1994. The decline in blood levels in the United States. *JAMA* 272:284-291.
- Polivka BJ 1999. Rural residents' knowledge of lead poisoning prevention. *J Community Health* 24:393-408.
- Porter EJ, Severtson DJ 2000. Potential effectiveness of parents' actions to reduce children's lead exposure. *J Pediatr Nurs* 15:282-291.
- U.S. Bureau of the Census. 1990. Census of Population, Summary Tape Files 1A and 3A. Washington, DC:U.S. Bureau of the Census.

## Appendix 1. Items used to measure lead poisoning knowledge and campaign recall and effectiveness.

### I. Demographics: Please tell us a little about yourself

1. Please tell us your ethnicity: \_\_\_\_\_
  - Black/African American \_\_\_\_\_
  - Caribbean/Virgin Islander \_\_\_\_\_
  - Hispanic/Mexican \_\_\_\_\_
  - Hispanic/Puerto Rican \_\_\_\_\_
  - Hispanic/Other \_\_\_\_\_
  - Native American/Alaskan \_\_\_\_\_
  - White/Caucasian \_\_\_\_\_
  - Asian/Pacific Islander \_\_\_\_\_
  - Other \_\_\_\_\_
2. Please tell us how many children you have: \_\_\_\_\_
3. Please tell us the age of each child (years): \_\_\_\_\_
4. Please tell us your age (years): \_\_\_\_\_
5. What is your relationship with the child(ren) that you are dropping off/picking up at this day care:
  - Mother \_\_\_\_\_
  - Father \_\_\_\_\_
  - Grandmother \_\_\_\_\_
  - Grandfather \_\_\_\_\_
  - Brother \_\_\_\_\_
  - Sister \_\_\_\_\_
  - Aunt \_\_\_\_\_
  - Uncle \_\_\_\_\_
  - Other relative \_\_\_\_\_
  - Other nonrelative \_\_\_\_\_
  - (please describe) \_\_\_\_\_
6. What was your household's total income before taxes in 2000?
  - Less than \$5,000 \_\_\_\_\_
  - \$5,000–\$9,999 \_\_\_\_\_
  - \$10,000–\$14,999 \_\_\_\_\_
  - \$15,000–\$19,999 \_\_\_\_\_
  - \$20,000–\$24,999 \_\_\_\_\_
  - \$25,000–\$29,999 \_\_\_\_\_
  - \$30,000–\$39,999 \_\_\_\_\_
  - \$40,000–\$49,999 \_\_\_\_\_
  - \$50,000 or more \_\_\_\_\_

### II. The following questions ask about your current knowledge of lead poisoning. Please answer to the best of your ability without looking up the answers or asking for help.

7. Which of the following are sources of lead exposure for children in the home? (circle one number on each line)
 

	Yes/True	No/False
Dust and paint chips from peeling paint	1	2
Drinking water from pipes that contain lead	1	2
Dirt and dust from hallways and other high-traffic areas	1	2
Window mini-blinds, manufactured before 1996	1	2
Some folk remedies	1	2
Glaze on imported pottery or porcelain	1	2
8. Which of the following groups are at greatest risk of lead poisoning? (circle one number on each line)
 

	Yes	No
a. Small children, younger than 6 years	1	2
b. Older children, 6–12 years of age	1	2
c. Pregnant women	1	2
9. The following are things you can do to reduce the risk of lead exposure in children? (circle one number on each line)
 

	Yes	No
Always use COLD water for cooking and drinking	1	2
Wash child's hands before his/her meals and snacks	1	2
Dust and sweep home often	1	2
Wet-mop window sills and wells with household cleaner	1	2
Make sure my child gets all his/her immunizations (shots)	1	2
Wash child's toys once a week	1	2
10. Lead poisoning may affect a child in which of the following ways? (circle all that apply)

- |  | Yes | No |
|--|-----|----|
| a. Slow a child's development  | 1   | 2  |
| b. Cause behavior problems (difficult to concentrate, easily upset)                            | 1   | 2  |
| c. Learning difficulties at school   | 1   | 2  |
| 11. Lead poisoning can easily be detected by a doctor by examining the child.                  | Yes | No |
|  | 1   | 2  |
| 12. The ONLY way to find out whether a child has lead poisoning is to have a blood test taken. | Yes | No |
|  | 1   | 2  |

### III. The following list describes the kinds of messages that the Hartford Health Department has posted or otherwise broadcast throughout the community that have been focused on the hazards of lead and lead poisoning. Please tell us whether or not you remember EVER seeing the following by the checking the appropriate box:

13. A special postmark stamp on an envelope of a card or letter
  - I remember seeing this
  - I do not remember seeing this
14. A sign on a city sanitation truck warning you of lead poisoning
  - I remember seeing this
  - I do not remember seeing this
15. A local newspaper advertisement warning you of lead poisoning
  - I remember seeing this
  - I do not remember seeing this
16. An advertisement on a milk or orange juice carton warning you about lead poisoning
  - I remember seeing this
  - I do not remember seeing this
17. A sign on a city bus or a city bus shelter warning you about lead poisoning
  - I remember seeing this
  - I do not remember seeing this
18. A billboard on the side of a road or highway warning you about lead poisoning
  - I remember seeing this
  - I do not remember seeing this
19. A display table in a paint or hardware store offering information about lead poisoning
  - I remember seeing this
  - I do not remember seeing this
20. Lead poisoning prevention art work display at the state capital
  - I remember seeing this
  - I do not remember seeing this
21. The video called *A Perfect Partnership* on Hartford Public Access Television
  - I remember seeing this
  - I do not remember seeing this

### IV. Please tell us whether or not you have taken the following steps within the past year to prevent lead poisoning and whether you took these steps as a result of seeing one of our messages. Fill in the appropriate box for each:

22. I asked my pediatrician about getting my child tested for lead poisoning.
  - Yes
  - No
23. I have called a phone number listed on a sign/ advertisement to learn more about lead poisoning.
  - Yes
  - No
24. I have changed the way I cook or clean in order to reduce the risk of lead poisoning.
  - Yes
  - No
25. I have changed the kinds of foods that I feed my family in order to reduce the risk lead poisoning.
  - Yes
  - No
26. I have spoken to my landlord about the hazards of lead poisoning.
  - Yes
  - No
  - Not applicable
27. I have taken other steps to prevent lead poisoning or to learn more about lead safety.
  - Yes
  - No
 If yes, please describe: \_\_\_\_\_
28. I have taken this/these steps because I saw or heard one of the messages that were described above.
  - Yes
  - No
 If yes, which message or messages prompted you to take these steps? Please check :
  - Postmark stamp \_\_\_\_\_
  - Sign on sanitation truck \_\_\_\_\_
  - Newspaper ad \_\_\_\_\_
  - Ad on milk/orange juice carton \_\_\_\_\_
  - Sign on bus/shelter \_\_\_\_\_
  - Billboard \_\_\_\_\_
  - Hardware store display \_\_\_\_\_
  - Artwork display \_\_\_\_\_
  - Video *A Perfect Partnership* \_\_\_\_\_

Items 7–12 were adapted from Alicea et al. 1998.