

## FEATURES

# Do Newspapers Lead with Lead? A Content Analysis of How Lead Health Risks to Children Are Covered

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### Abstract

Lead poses a serious environmental health risk to young children, causing such irreversible health effects as mental retardation, stunted growth, and hearing and visual impairment. Studies suggest that various sectors of the public, including children's caregivers, are not sufficiently concerned about this risk or knowledgeable about ways of minimizing it. Because newspapers are one of the primary ways members of the public learn about risks, the authors examined the characteristics and content of 152 newspaper articles on lead to determine when coverage occurred and what information was provided. Results revealed that newspapers most often covered lead as a local news story. Few articles identified children under six years of age as the most vulnerable group or provided important information on health effects, sources of exposure, or abatement methods. The authors' recommendations focus on helping environmental health professionals work with newspaper journalists to improve the information available to the public.

### Introduction

Lead presents one of the most serious and well-documented health risks to young children (U.S. Environmental Protection Agency [U.S. EPA], 1988). The health effects of lead exposure include mental retardation, stunted growth, loss of motor control, permanent hearing and visual impairment, and, at high-enough levels, death (Needleman, 1990). Lead poisoning at a young age also has been linked with adverse consequences later on in life, such as increased juvenile delinquency, failure in school, and even an increased propensity to commit violent crimes such as homicides (Stretesky & Lynch, 2001).

Children may encounter lead almost anywhere, from their homes to their playgrounds. Lead paint continues to cause most cases of severe lead poisoning in children, although its use was outlawed in 1978 (Needleman, 1998). As older homes deteriorate or are renovated, lead paint may flake, creating a hazard of ingestion by children and dust contamination that is often invisible to the unaided human eye.

In the United States, about 7.6 percent of children under six years of age are estimated to have blood lead levels above those that federal agencies consider safe (the blood lead standard is currently 10 micrograms per deciliter [ $\mu\text{g}/\text{dL}$ ]) (Centers for Disease

Control and Prevention [CDC], 2000). These children disproportionately live in poor, urban areas, and consequently, in some parts of the country, up to 30 percent of children may be exposed to unsafe levels of lead (CDC, 2000).

### Public Concern and Knowledge About Lead as a Risk

Research on risk perception suggests that Americans are not sufficiently concerned about the risk posed by lead. Slovic's classic work (1987) explains this phenomenon by categorizing risks according to the extent that they comprise known and dreaded factors. The risk from lead paint exposure, Slovic finds, is consistently rated as slightly unknown and mostly undreaded (Slovic, 2000). Thus, this risk falls close to the origin on his two-factor plot, suggesting public ambivalence.

In addition, at least three studies have examined the knowledge American parents and other caregivers have of lead as a hazard. Mehta and Binns (1998) found respondents correctly answered questions about lead exposure, but not about lead-poisoning prevention, including the role of proper nutrition. For example, 88 percent of parents surveyed correctly replied that lead paint is more likely to exist in older homes, but only 32 percent knew that cleaning a home with soap and water is effective at removing lead. Polyvika (1999) found that respondents did worst on questions about the leaching of lead into hot water as opposed to cold water (more leaching occurs in hot water), the positive benefits of activities such as cleaning

windowsills or drinking milk, and the long-term health effects of lead exposure. Mahon (1997) found that parents are relatively aware of the risk from lead paint but unaware of the risk from lead dust (61 percent and 15 percent, respectively). These three studies suggest that parents and children's caregivers possess limited knowledge about the risk from lead, are relatively unaware of nonpaint exposure sources such as lead dust, and are not well informed about reducing the risk of lead poisoning. These findings are troubling, because, while the risk associated with lead exposure is great, it is a risk that can be significantly reduced through preventive actions (Endres, Montgomery, & Welch, 2002).

### Sources of Information About Lead and Its Risks

Little is known about where people obtain information about lead, or even about what information is available. One recent exception is a study identifying individual preventive actions covered in state agency brochures (Endres et al., 2002). Public-opinion polls suggest that mass media are a key source of information for public health and environmental threats in general. A study by McCallum, Hammond, and Covello (1991) found that "overwhelmingly, mass media sources, particularly newspapers and television news, were cited as the source of respondents' recent information on environmental risks." Therefore, it is reasonable to assume that mass media, including newspapers, may be a key source of lead information. Yet almost nothing is known about the media's role in conveying information about this risk to the public. No studies, to the authors' knowledge, have examined how the risks of lead are covered by mass media.

### Purpose of Study

This study presents a first attempt at examining newspaper coverage of lead using the method of content analysis. Content analysis systematically examines the communications content of messages and thus sheds light on why and how the media cover certain issues (Poindexter & McCombs, 2000). This study examined the contents of 152 newspaper articles on lead published during the year 2000. The articles were coded both for content features, such as story length and article type, and for explicit content, such as the presence of information on health effects. Newspapers were selected over television, the other primary source of

## TABLE 1

### Predictors of Detailed Lead Content in Newspaper Articles (n = 74)

Independent Variables <sup>a</sup>	B	Standardized Beta
Midwest <sup>b</sup>	-0.196	NS
Southeast	0.338	NS
West	-0.173	NS
Nonnews articles (e.g. feature, real estate)	1.193	0.14*
Number of words in article	2.966 E-04	0.12*
Percentage of paragraphs in article that reference lead	6.820 E-02	0.78***

<sup>a</sup> Ordinary least-squares regression.

<sup>b</sup> East is the control region. Regions are based on those defined by the electronic database *Lexis-Nexis (Academic Universe)*, which was used to identify the articles examined in this study.

\*\*\* =  $p < .001$ . \*\* =  $p < .01$ . \* =  $p < .05$ .

Note: The dependent variable consists of a sum of the number of health effects (0 = none, 1 = general, 2-5 = one to four specific effects); the number of sources of lead mentioned (0-4); the extent of the abatement information provided (0 = none, 1 = general, 2-5 = one to four specific methods); discussion of the population at risk (0 = none, 1 = general, 2 = specific); and whether a way of getting more information was provided (0 = no, 1 = yes). Thus, the minimum score was 0 and the maximum score was 17, and stories with higher scores contained more detailed risk information about lead.  $F = 35.04$ ,  $p < .001$ , and adjusted  $R^2 = 0.57$ .

public-risk information (McCallum et al., 1991), because of the relatively higher amount of news space in newspapers compared with the typical 30-minute TV news broadcast. In addition, daily newspapers reach over half the country's population directly (Newspaper Association of America, 1999) and even more Americans indirectly as people discuss ideas they encounter via these media (Rogers, 1995).

Environmental health professionals are important in the process of providing risk information to the public via newspapers. Media outlets have direct access to the public, but journalists rely on other professionals to supply them with relevant information for their audiences. By understanding current newspaper coverage, environmental health professionals will be equipped to anticipate media coverage of lead and to supply journalists with important information about lead that may not otherwise be reported.

### Methods

To collect a representative sample of newspaper articles on lead, the electronic database *Lexis-Nexis (Academic Universe)* was searched. *Lexis-Nexis* contains the full text of approximately 175 newspapers in the United States, including newspapers from most states. While it does not provide a completely representative sample of the news an aver-

age American might encounter on a day-to-day basis (the newspapers with the smallest circulations tend to be excluded, for example), *Lexis-Nexis* is the most comprehensive text-searchable database currently available in the United States.

This preliminary effort focused on current coverage of lead issues by newspapers. Therefore, the keywords "lead poison," "lead paint," and "lead wick" were used to search the database for articles printed in 2000. The initial search retrieved about 1,500 articles. A systematic sample with a random start (Babbie, 1990) of 152 articles was drawn from this retrieval, excluding editorials, obituaries, and articles that appeared in legal newspapers. Each article was read and coded for several variables:

- length (in words);
- the section of the newspaper it appeared in;
- its news peg—that is, the event that triggered the coverage (e.g., a court case);
- whether the article provided information on the number of cases of lead poisoning;
- whether it described specific health effects of lead poisoning;
- whether it provided information about how to abate lead;
- what sources of lead exposure it mentioned; and
- whether it provided sources of additional information about lead.

**TABLE 2****Characteristics of Lead News (n = 74)**

Section of the Newspaper in Which Lead Stories Appeared	Percentage
Local news	61
Regional news	22
National news	4
{News subtotal}	{87}
Feature stories/human interest	10
Real estate	3
News Trigger for Stories about Lead	
Government/legal actions	53
Specific contamination incident	24
General information	12
Medical/academic findings	5
Other	6
Vulnerable Population Mentioned in Article	
Young children (under 6)	36
Children, in general	30
No vulnerable age mentioned	34
Number of Children Article Cites as Affected	
Specific numbers (local or national)	28
General reference (e.g., "lots")	4
No mention	68

**Results**

The initial search identified 1,500 articles published by 175 newspapers in 2000, suggesting an average mention of lead once every 45 days by each paper. The references were unlikely to be accompanied by additional information about lead, however. This observation is based on a sample of 152 articles, about half (51 percent) of which were triggered by a news event that had little to do with lead. Articles of the latter type make only a passing reference to lead—for example: "The school needs to be renovated because it contains asbestos and lead paint" or "One of the issues the Congressman has worked on is the removal of lead paint." Such common, but brief, references to lead are unlikely to inform the public about lead and its risks.

The articles that mention lead only in passing are, in fact, quite different from those that focus on lead (the remaining 49 percent of the 152 sampled articles). A correlation analysis showed that articles written for a non-lead-related reason are unlikely to contain information on the health effects of lead

( $r = -.11$ ), the sources of lead ( $r = -.50$ ), the population most at risk for lead poisoning ( $r = -.55$ ), or information about the number of children afflicted by lead poisoning ( $r = -.41$ ). In contrast, the articles focusing on lead are more likely to include detailed information of this type (the correlations are equally strong, but in the positive direction). Therefore, the remaining analysis pertains to this subset of the sample, consisting of articles written for a lead-related reason.

**Characteristics of Articles That Focus on Lead**

Even among the 74 articles written for a lead-related reason, some contain more detailed information than others. To capture this variation, a score was computed for each article to describe how much information about lead is included. Points were awarded based on factors such as how many health effects of lead were discussed, how many sources of lead exposure were mentioned, whether the population most at risk for contracting lead poisoning was identified, and how many

ways of abating the lead hazard were discussed. For each of these factors, the article received points (possible range = 0–17, mean = 5.99, standard deviation = 3.96). Then ordinary least squares regression was used to predict which articles were most likely to contain detailed information about lead.

The analysis revealed that region of the country was not a significant predictor of detailed lead content. In other words, articles across the country appear to be similar, indicating, perhaps, that in all regions similar journalistic factors—rather than the proportion of children affected—drive lead coverage. In contrast, non-news articles (i.e., feature/human-interest and real estate articles), longer articles, and those with a higher percentage of paragraphs mentioning lead were significantly more likely to contain detailed information (Table 1). These three variables accounted for well over half the variance in the presence of detailed lead information.

Most of the 74 articles written for a lead-related reason appeared as news items, with the preponderance written as local news items (Table 2). In other words, lead issues were most often discussed when they could be framed to meet standard journalistic criteria for newsworthiness (Gans, 1979; Sandman, 1994). The primary news trigger for these lead stories tended to be an event. For example, a legal proceeding or action by some level of government initiated more than half of the lead stories. The triggers included proposed regulations, lawsuits, and government assistance to families combating a lead problem. Another popular trigger was a specific lead contamination incident. Articles written to provide general information about lead and in response to new academic or scientific findings were rarer.

**Content of Articles That Focused on Lead**

The authors learned that even articles focused on lead contain little specific information about lead poisoning (Table 2). Some articles mention young children as being most vulnerable, but a similar number of articles are just as likely not to mention any at-risk population, or to refer to lead as a concern for "children" without specifying the most at-risk age range. The articles are even less likely to contain information about how many children in the country, or in the local reporting area, are affected by lead poisoning. Most of the articles make no mention of the scope of the lead-poisoning problem, some provide specific numbers, and a few

make vague references to “lots” of cases of lead poisoning.

Although the articles seem to suggest that lead is “bad,” fewer than half of them provide specific information about what can happen when children are exposed to lead (Table 3). A few articles provide no information on the health effects of lead, and more than one-third simply refer to lead as “poisonous” or “hazardous.” The articles that include more detailed health information, however, provide comprehensive information. The authors coded the health effects discussed in the articles into four broad categories, using a dichotomous variable (information present or not present) for each category. These categories are as follows: mental effects (e.g., loss of intelligence), physical effects (e.g., loss of hearing), behavioral effects (e.g., increased juvenile delinquency), or, at the extreme, death. A mean of 2.85 types of health effects (of the four possible) are mentioned in each article that addressed any health effects. Mental, physical, and behavioral effects are likely to be mentioned together (all have bivariate correlations of .80 or higher). Death is least likely to be mentioned.

Information about ways to remove lead or to abate the lead hazard is also unlikely to be provided (Table 3). One-third of the articles do not discuss possible ways of reducing the hazard, and just over another quarter mention only that it is possible to abate the hazard, without providing information about how to do so. The remainder of the articles provide some detailed information about how to reduce risks from lead exposure. The information is not comprehensive, however. Where an abatement method is presented, only 1.48 types of methods (of four possible) are mentioned. The abatement methods most frequently identified involved paint, either removal of lead paint or covering of chipping or deteriorating paint. Other abatement methods, such as frequent cleaning or nutritional supplements, are mentioned infrequently. This pattern contrasts with the coverage of preventive measures by state agency brochures; the brochures tend to list cleaning and nutrition more frequently than removal or covering of paint (Endres et al., 2002).

As the primary cause of lead poisoning in the United States, lead paint not surprisingly is the source of lead most likely to be mentioned in newspaper articles. Lead paint by itself, however, is not necessarily a cause for alarm. The threat is largest when lead paint peels, or where lead dust is being formed

**TABLE 3**

**Newspaper Coverage of Lead Health Effects, Abatement Methods, and Exposure Sources (n = 74)**

Health Effects	Percentage of Articles Covering Topic
No health effects information	15
General information only (e.g., “hazardous”)	39
Specific health effects information	46
Mental (e.g., loss of IQ)	43% of all (93% of those with specific effects)
Physical (e.g., hearing impairment)	37% of all (80% of those with specific effects)
Behavioral (e.g., delinquency)	34% of all (74% of those with specific effects)
Death	18% of all (39% of those with specific effects)
Abatement Methods	
No abatement information	33
General information only, e.g. “abated”	28
Specific abatement information	39
Paint removal or covering	34% of all (87% of those with detailed abatement)
Cleaning	14% of all (36% of those with detailed abatement)
Nutrition	5% of all (13% of those with detailed abatement)
Other	5% of all (13% of those with detailed abatement)
Sources of Exposure	
Lead paint	100
Peeling lead paint	38
Lead dust	26
Other sources (e.g., soil, water)	15
Number of Exposure Sources Mentioned	
1 (e.g., lead paint only)	50
2 (e.g., lead paint and one other)	24
3 (e.g., lead paint and two others)	23
4 (e.g., paint, peeling paint, dust, and some other)	3

(e.g., via the opening and closing of a window). Only some newspaper articles explicitly tell readers that peeling paint poses a special hazard (Table 3). Likewise, lead dust as a source of lead exposure is infrequently mentioned, and other sources such as candlewicks, drinking-water conduits, and soil go almost completely unmentioned. Half of the articles only mention lead paint as a source (that is, with no mention of peeling paint or lead dust), and the articles mention an average of 1.78 types of potential sources of lead exposure (of four possible). While most exposure sources are not mentioned simultaneously, a combined discussion of peeling paint and lead dust is likely ( $r = .54$ ).

Finally, few articles (7 percent) provide sources of additional information such as a Web site address, a toll-free hotline, or a way

to contact the local housing bureau or health authority for concerned readers who wanted to learn more about lead. The articles also fail to mention the many lead brochures produced as a public service by government, environmental, and public-health agencies. These brochures tend to provide readers with comprehensive information about lead and its health effects (Endres et al., 2002).

In summary, the articles with most detail on the lead risk are long, non-news articles. Newspaper coverage of lead focuses primarily on the risk from exposure to lead paint, with little attention to peeling lead paint or to lead dust. Information about how to abate the lead hazard likewise focuses on paint-based solutions as opposed to frequent cleaning or improved nutrition. Overall, half of all articles reviewed mention

**TABLE 4****Components of "Comprehensive" Lead Articles (n = 74)**

Component	Percentage of Articles Containing Component
Identified the population most at risk for lead poisoning	36
Provided specific information on the health effects of lead exposure	46
Discussed nonpaint sources of lead exposure	50
Specified ways to abate lead hazards	39
Met all four above criteria	28

**TABLE 5****How Environmental Health Professionals Can Assist Newspaper Journalists**

Information to Provide	Resources/Wording to Suggest
Number of cases of lead poisoning nationally and in selected states	Childhood blood lead levels by state— <a href="http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4950a3.htm">http://www.cdc.gov/mmwr/preview/mmwrhtml/mm4950a3.htm</a> . "Nationally, 1 in 13 children under the age of six are estimated to have unsafe levels of lead in their blood."
Approximate number of dwellings with lead paint, by U.S. county	Number and percent of older residences by county— <a href="http://www.cdc.gov/nceh/lead/surv/data.htm">http://www.cdc.gov/nceh/lead/surv/data.htm</a> . "___% of residences in ___ County were built before 1950 and thus are likely to contain lead paint."
Potential exposure sources of lead	Overview of potential exposure sources of lead— <a href="http://www.epa.gov/seahome/leadenv/src/source.htm">http://www.epa.gov/seahome/leadenv/src/source.htm</a> . "Unsafe levels of lead can also be found in the dust of homes with lead paint, in soil, in drinking water, in places where leaded gasoline has spilled, and in some consumer products."
Organizations working on lead, by state	List of lead contacts, by state— <a href="http://www.epa.gov/seahome/leadenv/src/contact.htm">http://www.epa.gov/seahome/leadenv/src/contact.htm</a> .
Information on the health effects of lead	Overview in addition to detailed health information— <a href="http://www.epa.gov/ttn/atw/hlthef/lead.html">http://www.epa.gov/ttn/atw/hlthef/lead.html</a> . "Even small amounts of lead can be hazardous to children. Lead poisoning can cause both short-term and long-term health problems, such as loss of intelligence, behavioral problems, and, at high-enough levels, death."
Information about blood lead tests	Information from the American Academy of Family Physicians— <a href="http://www.familydoctor.org/handouts/617.html">http://www.familydoctor.org/handouts/617.html</a> . "Your family doctor can perform a simple blood test to check for lead poisoning. Any young child who lives in a home that may contain lead paint should be tested."
Population most at risk for lead poisoning	Overview of at-risk populations— <a href="http://www.epa.gov/seahome/leadenv/src/pop.htm">http://www.epa.gov/seahome/leadenv/src/pop.htm</a> . "Children under the age of six are most susceptible to the negative health effects of lead."
Sources of general information and information on how to reduce the risk of lead poisoning	National Lead Information Center—(800) 424-LEAD Info from U.S. EPA— <a href="http://www.epa.gov/opptintr/lead/leadinfo.htm">http://www.epa.gov/opptintr/lead/leadinfo.htm</a> . Info from CDC— <a href="http://www.atsdr.cdc.gov/tfacts13.html">http://www.atsdr.cdc.gov/tfacts13.html</a> . "In addition to testing your children for lead poisoning, you can do several things to reduce the risk. Frequently washing children's hands and scrubbing windowsills and floors with soap and water to remove lead dust are two simple things you can do to make your child safer. Making sure your child gets enough calcium is also important."

lead only in passing; of the remainder, only 28 percent identify the population most at risk for lead poisoning, provide specific information on the health effects of lead exposure, discuss nonpaint sources of lead exposure, and specify ways of abating lead hazards. In other words, just over a quarter provide comprehensive risk information for readers (Table 4). Generalizing to the full sample, the authors thus expect that about 200 comprehensive articles about lead were published during the year 2000, or just over one for each newspaper represented in *Lexis-Nexis*. During the same time frame, each *Lexis-Nexis* paper could be expected to have had about seven times as many stories with either passing references to lead or little information about lead.

**Discussion**

The analysis presented here suggests that U.S. newspaper coverage of lead as a hazard is limited. Despite the number of children affected, lead does not appear to generate much detailed newspaper attention. Lead is not an unknown quantity in newspapers, however. Newspapers seem to make the implicit assumption that readers know that lead paint is "bad," but most articles provide little information to explain why this is so. An article of this type may address the need to remove lead paint while renovating a school but fail to mention why such an action is necessary.

It is important to note that most of the articles do not set out specifically to provide information about lead to the public. The very existence of the article typically is triggered by news events. Thus, the reporter provides only as much information about lead as is deemed necessary to cover the story. This phenomenon is not a flaw in the articles themselves. Rather, it is a reflection of how news values affect lead coverage. Reporting conventions lead journalists to minimize the amount of lead coverage (because lead poisoning happens slowly over time, it frequently is not seen as new or dramatic enough to be "news") while downplaying the risks lead exposure poses. The net effect of these practices is that newspaper coverage of lead neither provides the public with sufficient information about lead nor leads to greater public concern about this hazard.

This study of lead coverage supports Sandman's first rule of media reporting on environmental risks, which suggests that journalistic criteria like timeliness matter more in reporting than calculated risk esti-

mates (Sandman, 1994). Thus, lead does not automatically generate media coverage just because it is a serious environmental health threat; instead, it tends to generate coverage when it can be linked to other news events. The result of this system of reporting is that the mass media provide only "meager risk information" on environmental topics (Griffin & Dunwoody, 1997); this conclusion seems equally appropriate for coverage of lead by newspapers.

The articles identified for this study are accurate in terms of what they say (none of the articles contain information that is explicitly wrong), but they are less than comprehensive—"meager"—in terms of the risk information they provide. The articles do not purposefully omit relevant information. This study speaks of their "meagerness" in the same spirit that Trumbo, Dunwoody, and Griffin (1998) talk of "bias" in environmental reporting: It happens as a normal consequence of human actions and is not the product of a conscious attempt to distort information.

## Conclusion

Environmental health professionals should be aware of times when lead is most likely to generate media coverage. Specifically, lead is most likely to become of interest to newspapers when a government entity is taking some action concerning lead or when some legal action concerning lead is occurring. As these incidents arise, environmental health professionals should provide reporters with information about lead that is otherwise unlikely to be included, and they should provide this information in ways accessible to journalists (Table 5). Providing specific, local details helps to make information more relevant for reporters and their readers. This information should cover the population at risk, health effects, sources of exposure, ways of minimizing risks, and sources for more information. In particular, the serious and long-term consequences of lead poisoning should be described, nonpaint routes of lead exposure such as lead dust should be identified, and less well known but very effective ways to abate the lead threat (such as frequent cleaning with soap and water) should be stressed.

As Sachsman (1999) notes, "Journalists are not about to adopt degree of risk as a determinate of environmental coverage, and news sources who wish to get their message across would be well advised to tell their stories in journalistic terms rather than in parts per billion." Those seeking to communicate about lead as a hazard should heed this advice. The information must be delivered to reporters in ways that are relevant for journalists and their readers (with simple language, and relevant, timely, local examples whenever possible). The ultimate decision about whether to include this additional information still rests with reporters and their editors, of course, but these "information subsidies" may be able to increase the likelihood of coverage (Griffin & Dunwoody, 1995) and to improve the coverage that does appear.

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