Interim REPORT

IN NEVADA, CHILDREN RUN BETTER UNLEADED

Centers for Disease Control and Prevention
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Under CDC Grant #1 H64EH000145-01
CLPPP Participants/Supporters

Anthem Blue Cross Blue Shield Partnership Plan
Board of Clark County Commissioners
Carson City Health and Human Services
City of Las Vegas
Clark County
Clark County Medical Society
Environmental Protection Agency
HealthInsight
LUCES (Latinos Unidos Celebrando Salud)
Nevada Cancer Institute
Nevada State Legislature
Nevada State Medical Association
Nevada State Health Division
Sierra Health Services
Southern Nevada Health District
Southern Nevada Area Health Education Center
State and Local Housing Authority
State of Nevada Division of Health Care Financing and Policy
U.S. Department of Housing and Urban Development
University of Nevada, Las Vegas Nevada Institute for Children’s Research and Policy
University of Nevada, Las Vegas Harry Reid Center for Environmental Studies
University of Nevada, Las Vegas School of Public Health
Washoe County
Washoe County District Health Department
Women, Infants & Children (WIC) Program

This report is a collaborative effort between the UNLV Nevada Institute for Children’s Research and Policy and the Southern Nevada Health District.
Introduction

In July 2006, the Southern Nevada Health District (SNHD) was awarded a grant from the Centers for Disease Control and Prevention (CDC) to establish a comprehensive, statewide screening, surveillance and primary prevention outreach and education program to eliminate childhood lead poisoning as a pediatric public health problem in Nevada. This created the Childhood Lead Poisoning Prevention Program (CLPPP). The purpose of the current document is to highlight the need for this program in the state of Nevada, information regarding the dangers of lead exposure, current and future directions of the program, and necessary improvements for a successful program. It is our hope that community members within the state of Nevada will work together as a team to reduce and eliminate lead exposure in Nevada’s children.

Currently, there is little to no data to suggest that Nevada does or does not have a problem concerning lead. Individuals in Nevada have a right to know if a lead problem exists in the state, where the problem is, and how to eliminate the problem. There are several unique characteristics in the state of Nevada, and Clark County in particular, that justified the need to explore sources of possible lead exposure including population growth, immigration, and poverty.

POPULATION GROWTH

Since 1994, Nevada has been one of the fastest growing states in the country, with over 70 percent of the state’s population residing in Clark County. This rapid and significant population explosion has stretched state and county resources, which in turn, limits the ability to meet increasing demands for health and social services.

In addition to the rapid population growth, the state of Nevada and Clark County face issues of poverty, poor housing conditions and lack of adequate lead screening resources, particularly for children. According to 2006 U.S. Census data, there are approximately 137,000 children under the age of 5 in Clark County alone.

IMMIGRATION

Minorities constitute nearly half of Clark County’s population, and approximately 27 percent of the population is of Hispanic origin. Population estimates indicate that over 60 percent of the foreign-born population in Clark County are not citizens. This demographic pattern presents concerns for public health initiatives and lead exposure prevention. The segment of the non-citizen population who are illegal immigrants typically do not have medical insurance, occupy older housing, earn lower wages, and suffer prior exposure to lead.

POVERTY

One challenge of a large population influx is the increasing number of people living in poverty. In 1999, nearly 15 percent of families with children under the age of 5 years in Clark County lived below the poverty level. Low income families may not be able to afford insurance, and may not receive preventive medical care, such as blood lead screening. As the population of uninsured residents increases, so does the number of unscreened children.

Another factor associated with income is enrollment in Medicaid. Medicaid programs require that children be screened for lead. As a result, a large portion of lower-income children qualify for free
screening. Previously it has been difficult to determine how many children in Nevada’s Medicaid programs received blood lead testing. Through the collaborative efforts of CLPPP staff and partners, Medicaid is now providing relevant data to assist the project’s screening efforts.

Impact of Lead Exposure on Child Development

Lead is a metallic element that can be absorbed by the body, usually through ingestion or inhalation. A person may breathe in or swallow dust or chemicals that contain lead, or eat foods or other items contaminated with lead. Once in the body, lead enters the blood and travels to tissues and organs, i.e., the liver, kidneys, lungs, brain and muscles. After several weeks, lead moves into the bones and teeth.

Young children are exposed to more lead hazards compared to adults and because they absorb lead more easily and rapidly, they are at a greater risk of elevated blood lead levels (EBLLs). Children under the age of 6 years often play on the floor or ground, where they can swallow or breathe lead that can be found in dirt, dust or sand. Also, dirt or dust on children’s hands, toys and other items may contain lead particles in it. The normal hand-to-mouth activity of children and babies increases their vulnerability.

Lead poisoning can result from the gradual accumulation of lead in the body after repeated exposure or by ingesting one large quantity. Smaller amounts of lead ingested by children can be harmful because 45-50 percent of the lead ingested will be absorbed into the child’s blood stream compared to only 10-15 percent in adults. Additionally, because certain parts of the nervous system are still in early stages of development, children are more susceptible to the toxic effects of lead. Unborn babies are also susceptible to the adverse effects of lead, as it crosses the placenta during pregnancy. Once lead is in the body, it can remain for over 30 years in the bones and teeth and can redeposit into the blood stream from the extraction of calcium in the bones. This continual release can also have negative effects.

Lead exposure can affect nearly every system in the body. At increasingly high levels of exposure, a child may suffer kidney damage, become mentally retarded, fall into a coma, and even die from lead poisoning. However, even low levels of exposure to lead can result in IQ deficits, learning disabilities, behavioral problems, stunted or slowed growth, and impaired hearing. Because of this, there is no safe blood lead level for children.

Symptoms of lead exposure or poisoning in children and adults may not be the same. In fact, most children and adults may not have any noticeable symptoms. It is common that lead exposure goes unnoticed until later in life when cognitive abilities are already impaired. The only way to determine if a child has been exposed to lead is to test the child’s blood lead level. This test measures the amount of micrograms of lead in each deciliter of his/her blood. In 1991 the CDC determined that if a child has a blood lead level of 10 micrograms per deciliter (10 μg/dL) or higher, public health attention should be initiated. In November of 2007, the CDC conceded that there is evidence that children can be affected by any blood lead levels above zero.

TREATMENT

Currently, there is no effective treatment to eliminate lead from the body. Treatment, in the form of chelation therapy, is provided only when someone has dangerously high levels of lead in his or her blood. Chelation therapy introduces drugs into the body that bind with lead in the bloodstream and cause it to be flushed from the body in urine and bile more rapidly than would happen naturally. The purpose of this treatment is to lower levels of blood in the body and does not prevent future exposure. This treatment is not recommended for individuals with blood lead levels below 45 μg/dL. Since lead can be harmful at levels much lower than 45 μg/dL, and the only known treatment...
cannot be administered, prevention of lead exposure becomes of prime importance.

**Screening in Nevada**

All children should be tested at ages 12 and 24 months. Also, if a child is less than 6 years of age and has never been tested for lead, he or she should also be tested. This simple blood test is covered by most insurance companies, including Medicaid and Medicare.

The U.S. Census Bureau estimates that almost 137,000 children under the age of 5 years resided in Clark County in 2006. That year, SNHD received less than 5,000 reported lead screenings for children in this age group. This means that less than 1 percent of children under the age of 5 were screened for lead in 2006.

Lack of blood lead test reporting has been a problem in Clark County and Nevada. In 2007, the Southern Nevada District Board of Health passed local regulations mandating laboratories and medical personnel to report cases of EBLLs to the local health authority. Regulations also require reporting blood test results indicating any lead exposure, even if they are not considered “high.”

Currently, there is no state legislation requiring blood lead results be reported in other jurisdictions in the state outside of Clark County. For this reason, it is difficult to determine the number of children who are being screened for lead statewide.

In the past three years, screenings have steadily increased in Clark County, most notably by 47 percent from 2005 to 2006 and continuing at a steady rate through 2007. Based on current screening data noted in Table 1, almost 25 percent of the children screened in Clark County were exposed to lead. Hispanic children are particularly at risk, accounting for over 50 percent of all childhood lead exposure including cases with blood lead levels above the level of concern (10 μg/dL). The table below shows ethnicity data, but race data is not available due to current reporting methods in place. Collaboration with major laboratories in Southern Nevada continues to obtain this information.

**Table 1. Screening Results for Children Ages 0-72 Months (August 2006-December 2007)**

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Male</th>
<th>Female</th>
<th>Unknown</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
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<td>4182</td>
<td>1</td>
<td>8561</td>
</tr>
<tr>
<td>Non-Hispanic</td>
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<td>8</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>14</td>
</tr>
</tbody>
</table>

* Children ages 72 and 73 months are not included in the figures above.

**Note:** Due to limitations by which the blood lead data was recorded in August and September 2006, the age, sex and ethnicity information for approximately 900 children between the ages of 0 and 72 months who tested with a blood lead level of 0 is not available. These children are not represented in the table, however they should be taken into consideration when calculating the number of children who demonstrated an exposure to lead versus the total number of children screened.
PUBLIC HEALTH RESPONSE
The SNHD Office of Epidemiology receives blood lead test results for children screened in Clark County. Blood lead levels of 10 μg/dL or higher in children under the age of 6 years prompt a public health response by the health district.

When this occurs, the child’s legal guardian is contacted to arrange an environmental investigation and a public health nurse is assigned as a case manager for the child.

Case Management
Public health case management consists of coordinating care and follow-up of children, ages 0-72 months, with blood lead levels of 10 μg/dL or higher. A trained public health nurse monitors medical care, educates the family and coordinates services.

Environmental Investigations
Environmental investigations are performed by investigators, who are EPA-certified lead risk assessors, in cases where a child has a blood lead level of 10 μg/dL or higher. The investigator researches sources of exposure by conducting interviews to determine where the child may have been exposed to lead and testing potential sources. SNHD notifies and educates the family and landlord about the identified lead hazards. Recommended actions are made to help control lead hazards in the home and prevent further exposure.

IMPROVEMENTS TO ENHANCE SCREENING EFFORTS
While screening rates have significantly increased over the past year, there are still several improvements needed to ensure the program’s success:

- More accurate lab reporting
- Increased communication with Medicaid

Laboratory Testing
It is extremely important that accurate data is reported to the health district by the laboratories analyzing blood lead levels. Problems with lab reporting occur as a result of inconsistent reporting formats. Specific information is needed to determine if an exposure problem exists in Clark County, and eventually Nevada. In addition it is necessary to better identify risk factors for lead exposure and vulnerable populations. To understand this problem as a whole, information such as race, ZIP Code, Medicaid enrollment status, and the type of blood test conducted (capillary or intravenous) are all crucial pieces of information that are not consistently reported.

This problem is in part due to lack of mandatory reporting laws as well as funds for labs to reprogram the reporting format to include the information needed. This information would allow us to detect whether efforts by SNHD and Medicaid were effective in increasing screening, if certain races or ZIP Codes had higher blood lead levels, and to identify certain races and areas that are still not being screened.

Medicaid
Program members have initiated collaboration with Medicaid officials to increase blood-lead screening, education and outreach among Medicaid recipients. Efforts to obtain Medicaid screening data have been successful and will continue.

Lead Sources in Nevada
In the past lead was widely used in such things as household paint, gasoline, pipes and pesticides. The use of lead has been restricted in these and many other products, but a person may still be exposed to lead from a variety of sources. The following is a list of common lead sources:
• Paint chips from interior and exterior paint in homes built before 1978
• Soil, especially in dense urban areas and playgrounds
• Household dust and debris from buildings built before 1978 undergoing remodeling or renovation
• Imported cosmetics, candy and toys
• Traditional Hispanic home remedies, such as Greta and Azarcon, an orange powder used to treat upset stomach or “empacho”
• Pottery and ceramics
• Work and hobby activities, such as construction, remodeling, radiator repair, pottery making or the use of an indoor firing range

INVESTIGATING LEAD SOURCES

In order to address potential lead hazards in a child’s environment, an investigator who is an EPA-certified lead risk assessor performs an investigation of the child’s home. The investigator examines the painted surfaces for evidence of lead-based paint, as well as building conditions that may contribute to paint deterioration. The investigation requirements include dust, soil and water sampling. In Clark County, the risk assessor typically examines other potential sources, such as glazed tile, bean pots, imported candies and folk remedies. The occupation or hobby of a parent or caregiver may also be considered.

During the past 18 months, teams of lead investigators from SNHD and lead inspectors from the University of Nevada, Las Vegas conducted environmental investigations and lead inspections. Preliminary data was collected from 58 homes completed between April 2006 and December 2007. Forty-three were environmental investigations for children with lead exposure, while 15 were risk assessments performed in homes built before 1978 without a child exposed to lead. Potential lead sources were categorized as either paint hazards (i.e., dust and soil contaminated by lead-based paint), or non-paint hazards.

Figure 1. Potential Sources of Lead in Clark County

Potential Sources of Lead in Clark County Investigations
April 2006-December 2007
Analysis of the results revealed that a majority of potential lead hazards arise from non-paint sources. The three most frequently found potential lead hazards not related to paint include tile, imported candies, and parent occupation (Figure 1). It is important to recognize that all of these could become hazards if ingested (i.e. if the tile were to chip, it would be a hazard because a child could eat pieces of tile on floor or chipping could cause dust with lead which could be inhaled).

LOCATING CHILDREN IN CLARK COUNTY WITH REPORTED LEAD EXPOSURE

Screening results in Clark County indicate that 2,281 children 0-72 months old had detectable blood lead levels (BLL>0). Of the approximate 86 ZIP Codes in Clark County, children exposed to lead have been identified in 66 ZIP Codes (Figure 2) indicating that lead exposure is occurring across Clark County. However, there are certain ZIP Codes where exposure is more prominent. ZIP Codes 89110, 89101, 89115 all contain over 100 test results that indicate lead exposure. The ZIP Code with the highest number of children is 89030 with 216 test results that indicate lead exposure. This information is used to target areas for screening and outreach activities that will help find children exposed to lead and to prevent future exposures to lead hazards. Due to limitations in reporting methods (no address listed), 33 percent of children with test results indicating lead exposure are not included in the map. Improvements in reporting requirements, as previously discussed, will assist with accurate identification of lead exposure in Nevada.

It is important to note that at this time, this is not enough data to determine if specific neighborhoods are at higher risk of exposure or to make a determination regarding specific sources of exposure in each ZIP Code. This data does
not indicate that lead exposure is due to housing in those ZIP Codes. These results could be due to an increase in participation in screening in these areas. This demonstrates the importance of having an active CLPPP in the state of Nevada. As this project continues, it is hoped that the data will give more explicit information on these vital questions.

**PREVENTING LEAD EXPOSURE**
The most effective ways to prevent lead exposure in Nevada’s children include monitoring imported goods that may contain lead, educating the public about products that may contain lead, performing abatement of buildings containing lead, and using lead-safe work practices when renovating or remodeling.

**Program Activities and Accomplishments**

**STRATEGIC ADVISORY COALITION**
In 2006, the Strategic Advisory Coalition (SAC) was established to advise and support SNHD in the development and implementation of a five-year elimination plan that provides direction for CLPPP activities. The SAC membership is composed of a cross-section of regional, state, county and community environmental and children’s health stakeholders from the public and private sectors that have an interest in eliminating childhood lead poisoning. Members are committed to public health and the well-being of the community, and receive no financial compensation.

**ELIMINATION PLAN**
The Elimination Plan precisely outlines strategies and activities to eliminate lead exposure as a public health concern in Nevada’s children by 2010. The plan was developed in conjunction with the SAC in mid-2007. A copy of this plan, along with the annual report, can be viewed on the SNHD website.

**LEGISLATIVE ACTIVITIES**
The Legislative Affairs Workgroup developed a resolution called “Childhood Lead Poisoning Prevention Program.” It was forwarded to lobbyists and provided to the Nevada Legislature on Feb. 7, 2007. The resolution was passed as a proclamation. This proclamation serves as a formal recognition of the efforts of the CLPPP to eliminate lead poisoning in Nevada.

**MANDATORY LAB REPORTING**
On Nov. 16, 2006, the Southern Nevada District Board of Health approved a proposed regulation that mandated all blood screening results indicating an exposure to lead in Clark County be reported to the health district. Subsequently, the Nevada State Board of Health also voted in favor of the proposed regulation on Dec. 8, 2006.

**PUBLIC OUTREACH**
During the past year, the Primary Prevention Workgroup initiated a public awareness campaign on the dangers of lead exposure. Workgroup members attended health fairs to distribute approximately 300-500 brochures and fact sheets in English and Spanish. Members also participated in numerous television and radio interviews. More than 9,000 lead prevention bookmarks were included in information packets provided to new mothers by Sierra Health Services. Additionally, the workgroup received funding from the Sierra Community Healthcare Foundation to develop a website and create a bilingual public service announcement (PSA) about sources of lead, screening and pre-1978 housing risk assessments. Presentations in English and Spanish were developed to educate the public, and are currently used by the Area Health Education Center. Collaborating with the State’s Women, Infants and Children (WIC) program resulted in lead poisoning prevention training through WIC’s updated curriculum. In December 2007 HealthInsight, the partner

Detailed program information is available on the SNHD website: [http://www.SouthernNevadaHealthDistrict.org/clppp/index.htm](http://www.SouthernNevadaHealthDistrict.org/clppp/index.htm)
organization that provides medical consultation for the project, trained almost 40 key staff members of the Nevada WIC clinics on lead poisoning prevention.

**COLLABORATION WITH HEALTH CARE PROFESSIONALS**

Medical education and outreach is being provided to health care professionals by Dr. Bill Berliner of HealthInsight, who is also part of the Primary Prevention Workgroup. This physician-to-physician interaction serves to breakdown potential communication barriers while encouraging screening efforts. A continuing education course on lead was developed and presented in June 2007 to medical professionals by Dr. David Bellinger, a renowned Harvard professor. In October 2007, an online course on lead became available to physicians.

### Current and Future Program Activities

All groups will continue to expand program activities throughout the year. Emphasis will be placed on building relationships with Medicaid providers, housing authorities and other organizations to strengthen community support in eliminating lead exposure as a public health concern in Nevada.

**IMPROVED SCREENING**

SNHD will introduce the LeadCare II, the only CLIA waived blood lead system, to the state of Nevada. This device improves on the original Lead Care, presently the most widely used blood-lead testing system in the world. Developed with the funding from the CDC, Lead Care II will improve patients’ health outcomes by performing rapid tests onsite rather than sending samples to an outside lab.

Its waived status will expand the potential sites where lead testing can be performed, such as community health centers, mobile clinics or health fairs. This device benefits patients and providers because there is a greater chance to test those children most at risk, and it provides quantitative blood lead results equivalent to those reported by outside laboratories in just three minutes. The CLPPP will work in close collaboration with the SNHD Childhood Immunization program to conduct outreach and screening activities.

**PRIMARY PREVENTION**

Activities from the supplemental grant from the Sierra Community Healthcare Foundation will be completed during the 2008 project year. The CLPPP will explore opportunities to broadcast the English and Spanish public service announcements on both radio and television. The program will also promote the website as a source of updated information for the general public and professionals.

**HOUSING-BASED PREVENTION**

A crucial component of the CLPPP involves preventing exposure to lead. Historically, the major environmental source of lead has been lead-based paint. Deteriorating lead-based paint creates dust, which may settle in buildings and in soil. Since the use of lead-based paint in residences was banned in the U.S. in 1978, the focus of housing-based prevention is on houses constructed before 1978.

A lead inspection will be conducted in the pre-1978 homes of people volunteering to have a lead investigation. The lead inspection, performed by an EPA-certified risk assessor, is an onsite visual inspection and environmental sampling of paint, dust and soil to determine the existence, nature, severity and location of a lead-based paint hazard. The risk assessor will provide a report explaining the investigation results, suggest ways to reduce or eliminate lead-based paint hazards and recommend acceptable strategies for controlling any hazards identified.

Lead inspections may be performed in any building occupied by children, including single-family homes, multi-family housing units, pre-schools, child care centers and schools.

### Legislative and Policy Considerations

The CLPPP Legislative Affairs Workgroup is tasked with identifying necessary legislative and policy changes to help eliminate childhood lead poisoning in Nevada. As one of the last states to start a CLPPP, Nevada is able to review and identify model legislation from other states with more mature
programs. Since there are currently no state laws or regulations related to the prevention of childhood lead poisoning in Nevada, the CLPPP is working with a clean slate to identify laws and regulations that best serve the needs of our children. Areas currently under consideration for legislation and/or policy development include:

- **Screening Laws:** Mandatory screening laws have been implemented in many states to ensure that children are routinely screened for lead. Some states require screening for all children (e.g., screening required before entry into child care setting and/or school), while others mandate screening for only some children (e.g., those in high-risk settings and/or who have been exposed to lead). Consideration will also be given to ease the process for allowing health departments to conduct screenings using a mobile unit.

- **Reporting Laws:** Mandatory reporting laws allow health authorities to track lead exposures, provide necessary case management and perform environmental screenings to identify potential sources. Under such laws, laboratories would be required to electronically submit specific data on all EBLLs to the appropriate health authority.

- **Environmental Screenings:** These screenings are necessary to identify potential sources of lead exposure, particularly in homes, child care settings and other buildings frequented by young children. Environmental screenings may be conducted in response to certain identified risk factors (i.e., pre-1978 home) or to potentially identify the sources of lead exposure for children with EBLLs.

- **Remediation:** Legislation and/or regulations address remediation of housing and/or buildings identified with potential lead hazards, particularly for the lower-income population. This component may also address mandatory remediation by property owners, particularly for rental properties and child care facilities.

- **Program Sustainability:** Currently, the CLPPP is funded through a 5-year grant from the CDC. Efforts will be made to secure funding through state, federal and private sources to continue and expand the efforts of the project statewide.

### Future Focus

Even though the program’s primary activities started in Clark County, CLPPP plans to expand statewide. Members will work to establish statewide screening and outreach activities appropriate for Nevada’s three geographic areas: north, south and rural. The activities will most likely vary to accommodate the unique and diverse needs of each population base.

The CLPPP will continue to promote awareness of lead poisoning, identify risk factors and appropriate control methods to eliminate childhood lead poisoning. Many states have implemented programs that can be modified to use in Nevada, such as Lead Safe Babies, Lead Abatement Strike Team and Lead Safe Work Trainings.

- **Lead Safe Babies** is a health prevention program with the lofty goal of ensuring that children never become lead poisoned. The program provides new mothers with necessary education and
materials to protect their children from lead poisoning. Results have shown a statistically significant increase in knowledge about lead poisoning among participants.

- The **Lead Abatement Strike Team (LAST)** was developed in 2002 in response to the community’s increased awareness of lead poisoning and concern about the lack of environmental remediation for identified lead hazards in homes occupied by children with EBLLs. The program’s efforts led to new appropriations for remediation and new enforcement codes.

- **Lead Safe Work Training** includes training for community members who plan to remodel their homes, or for businesses that work with lead hazardous materials. The training educates individuals about the risks of exposure, sources of contamination and lead-safe practices.

In order to implement education and prevention activities throughout Nevada, it is essential to understand sources of lead exposure and at-risk populations. Throughout this report several barriers to collecting this information have been specified. Program members will work to resolve these issues throughout the course of the grant period, and will aim to expand data collection that includes all health care agencies, collection of information on minority communities and prevalence of cultural practices with potential for lead exposure. They will also establish criteria to investigate communities at greater risk of lead exposure.

**HEALTHY HOMES**

Nevada should maintain a Childhood Lead Poisoning Prevention Program to ensure that lead poisoning is eradicated. The program’s success depends on many factors including funding. One source of funding that should be explored is HUD Healthy Homes grants. HUD grants provide funds for remediation work in partnership at city and county levels. Healthy Homes programs provide funds to investigate all home hazards: physical, chemical and biological. In the future moving to a Healthy Homes model, which includes lead as a component, is a holistic approach to ensure that Nevada’s residents, in particular children, are living in a safe, healthy environment. By considering Healthy Homes now, Nevada will be heading towards national goals of Healthy People 2010.

**Conclusion**

Since its inception, the CLPPP has established a solid foundation to expand the program statewide. Thus far, the program has successfully made progress towards accomplishing the outlined goals and objectives, and many tasks were completed beyond the scope of the plan.

Support from local and state policy makers, and the community is necessary to sustain the program and ultimately, eliminate the threat of lead poisoning in Nevada’s children.
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