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Safe Drinking Water Branch
Tripler Army Medical Center
Waianae Coast Comprehensive Health Center
West Honolulu PHN Section, Department of Health
Women, Infant & Children (WIC) Program, Department of Health
June 20, 2006

Dear Health Care Providers and Community Colleagues:

We are pleased to present you with the Childhood Lead Poisoning Prevention (CLPP) Guidelines to assist you in the prevention and treatment of lead poisoning in our most vulnerable population, the youngest children of Hawaii. It is the product of a collaborative effort by members of the CLPP Program and the CLPP Coalition.

As a state, we can reach the 2010 Healthy People Objective of total elimination of elevated blood lead levels in children and give our children a healthy beginning in life. To do so, we must work together to increase the public’s awareness of lead poisoning and its effects on children and to consistently screen children at-risk with a blood lead test.

The intent of this document is to provide guidelines that will achieve the 2010 objective. Although Primary Health Care Providers are responsible for screening and treatment, active participation of parents, families, communities, and policy makers will ultimately determine its success.

On behalf of the Maternal and Child Health Branch, Family Health Services Division, State Department of Health, we encourage you to support the elimination of childhood lead poisoning in Hawaii.

Sincerely,

Chiyome Leinaala Fukino, M.D.
Director of Health
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EXECUTIVE SUMMARY

The Maternal and Child Health Branch (MCHB), Family Health Services Division (FHSD) of the Hawai’i State Department of Health (DOH) administered the Childhood Lead Poisoning Prevention Program (CLPPP) through grants from the Centers for Disease Control (CDC) and Prevention and state support from 1992 to 2003. The Hawai’i CLPPP Guidelines was written in collaboration with the CLPPP Coalition.

PURPOSE

The purpose of the guidelines is to keep Hawaii’s children safe from lead hazards and lead poisoning by providing information and resources to health care providers, community agencies and other interested parties for primary prevention activities, and guidance to health care professionals on risk assessment and case management of children with Elevated Blood Lead Level (EBLL).

WHY LEAD POISONING PREVENTION IS NEEDED

Even at low levels, lead exposure has been shown to cause adverse health effects in young children – especially those 6 years old and under. According to the CDC, childhood lead poisoning is a major preventable environmental health problem in the United States. While the toxic effects of lead have been known for many decades, it was not until the 1960’s that laws and regulations were enacted to eliminated lead from lead-based products. However, young children are still greatly affected by lead poisoning despite efforts to prevent exposure and to remove lead from the environment. Therefore, prevention and early identification of lead poisoning is the best and only effective remedy.

Elevated blood lead levels among children in Hawai‘i continue to be a concern. In 2002, of the 10,434 children screened, over 100 children had blood lead levels greater than or equal to 10 mg/dL (the threshold for lead poisoning established by the CDC). The majority of EBLL cases occur on Oahu’s Leeward areas and the Big Island of Hawai‘i. Many of the children with EBLL are enrolled in the Med-QUEST program. However, of greatest concern is that only about one-third (1/3) of eligible children are being screened as recommended by the CDC.
INTRODUCTION

The Childhood Lead Poisoning Prevention (CLPP) Guidelines is designed for Health Care Providers and Public Health and Community-based Agencies in Hawaii that have the responsibility to:

- Provide anticipatory guidance to prevent lead poisoning from occurring
- Identify and screen children who are at-risk
- Ensure that children who are lead poisoned receive appropriate medical services

GOAL

The goal of the guidelines is to keep children safe from lead hazards and lead poisoning in the State of Hawai‘i.

OBJECTIVE

The objectives of the guidelines are to:

1) Provide information and resources on childhood lead poisoning to health care providers, community agencies and other interested parties
2) Provide guidance to health professionals on risk assessment and case management of children with elevated blood lead levels

The plan addresses the hazards and consequences of lead exposure for children as well as provides guidance to facilitate the prevention of lead poisoning. Suggestions for the management of children with elevated blood lead levels are also outlined. The recommendations are guided by the Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials (Centers for Disease Control and Prevention, 1997), and Managing Elevated Blood Lead Levels Among Young Children (Centers for Disease Control and Prevention, 2002).

The Hawai‘i CLPP Plan was written under the auspices of the Maternal and Child Health Branch, Family Health Services Division of the State of Hawaii Department of Health in conjunction with the CLPP Coalition. For more information, contact the MCHB, at (808) 733-4056.
PART I:
GENERAL INFORMATION ON LEAD POISONING
LEAD: A HEALTH PROBLEM

Lead, a soft, bluish-gray naturally occurring heavy metal, is one of the established toxic substances to humans. Children between the ages of birth and 72 months (6 years old) are the most vulnerable because of their immature nervous system. Even at levels below the threshold of 10 mg/dL (micrograms of lead per deciliter of blood) established by the CDC, it has been associated with adverse health effects in young children (Bernard, 2003; Canfield, Henderson, Cory-Slechta, Cox, Jusko & Lanphear, 2003, President’s Task Force on Environmental Health Risks and Safety Risks to Children, 2000).

Lead’s impact on children’s development has been well documented. When absorbed into the body, lead is highly toxic and interferes with the growing brain and nervous system and causes damage to other body systems (Bernard, 2003). At higher levels, lead can cause seizures, cerebral edema, mental retardation and severe behavioral disorders, and even death (Alliance to End Childhood Lead Poisoning, 1999; Jacobs, 1996). Children with chronic lower level exposure are more likely to have reduced IQ, learning difficulties, hearing loss, and impaired growth and adverse behaviors like Attention Deficit Hyperactivity Disorder (ADHD) at school age.

The effects of lead are long lasting and irreversible (Rogan & Ware, 2003). Studies have correlated lead exposure with hypertension in adults (Nash, Magder, Lustberg, Sherwin, Rubin, Kaufmann & Silberfeld, 2003; Agency for Toxic Substances & Disease Registry [ATSDR], 1999). The meta analysis conducted by the Agency for Toxic Substances and Disease Registry (ATSDR, 1999) further associated lead exposure to impaired renal function and heme biosynthesis, and possibly producing cardiovascular effects as well.

In response to the research and the growing concern about the effects of lead on young children that the CDC over the years has lowered the threshold of exposure from 40 mg/dL in 1970 to 25 mg/dL, and most recently to 10 mg/dL in 1991 (Bernard, 2003). Although, there has been discussion on the need to lower this level even lower, CDC does not have plans to do so at this time. Without a change, Bernard (2003) suggests that prevention efforts can be improved by:

1. Revising the follow-up testing schedule for infants aged 1 year or less with blood lead levels of 5 mg/dL or higher
2. Universal education about lead exposure risks
3. Universal administration of improved, locally validated risk-screening questionnaires
4. Enhanced compliance with targeted screening recommendations and federal health program requirements
5. Development by regulatory agencies of primary prevention criteria that do not use the CDC’s intervention level as a target “safe” lead exposure

Medicaid enrolled children are especially vulnerable, accounting for 60% of young children with blood lead levels of 10 to 19 mg/dL and 83% of young children with levels >20 mg/dL (CDC, 2000). According to the CDC and the U.S. General Accounting Office (GAO), the prevalence rate
among children aged 1 through 5 years enrolled in Medicaid programs are three times greater than that among young children not enrolled in these programs.

Prevention and early identification of lead poisoning remains the best and only effective remedy.

CHILDHOOD LEAD POISONING IN HAWAII

Hawaii is similar to other states in that the biggest threat to young children is lead in paint. This exposure comes from the following areas:

- The old “plantation homes” of the sugar cane and pineapple industry era are deteriorating. As the paint in these homes deteriorate, lead dust is released into the environment.
- The economically disadvantaged neighborhoods have older homes as well. For example, Kalihi is one of Honolulu’s older and poorer communities and is densely populated. It is an area with many small to medium size businesses and is a thoroughfare for four major highways.
- Although the exact numbers are not known, older homes are purchased by younger families as “fixer uppers.” If renovations are not done properly, the young children in these families could be exposed to lead dust.

Over the years, lead has been found in catchment water systems on the Big Island, the water system in UpCountry Maui, some preschools across the state, mini blinds, imported ceramics, toys, and food.

Since 1991, the U.S. Department of Health and Human Services, through the CDC, has supported efforts to eliminate childhood lead poisoning. The MCHB of the State DOH has administered the CLPP through grants from the CDC from 1992 to 2003.

The first grant supported a complete lead program that included staff to collect and analyze blood lead data, inspection of homes of children with elevated blood lead levels, providing case management services, and mobilization of other agencies and communities through coalition building. In 1997, the second grant from CDC was a surveillance only grant. Children’s blood lead levels were monitored across the state, and health care providers were notified and assisted when elevations occurred. In 2001, the grant allowed expansion of services to include primary prevention and outreach activities. With the increase in outreach activities, especially to the Early Head Start/Head Start and the Special Supplemental Nutrition Programs for Women, Infant, Children (WIC) programs, the number of blood lead screening performed markedly increased.

According to National Health and Nutrition Examination Survey III (NHANES III), the elevated blood lead level rate nationally was 4.4% between 1991 and 1994, (MMWR, 2003). In line with the national average, the percentage of children with elevated blood lead levels in Hawai‘i in 1993 was 4.26%. The rate peaked again in 1995 (3.5%) but has decreased steadily since, with a slight increase in 1998. Hawai‘i’s incidence of elevated levels in 2000 was 1.08% of children screened in comparison to the national average of 2.2% (MMWR, 2003).
In 2002, Hawaii’s incidence rate was almost 1% of children screened. Of the 78,163 children under 5 years of age in the State (2000 Census), only 12% were screened in 2002.

While the percentage of children with elevated blood lead levels has continued to decrease, the number of children screened has increased yearly (refer to Table 1). However, blood lead screening numbers markedly vary from county to county with the largest number of screenings performed in the City and County of Honolulu and Hawaii County (refer to Table 2). In general, the same providers order most of the blood lead tests yearly.

Figures 1 to 4 show the total number or blood tests performed and the number of providers ordering the majority of the tests in each county from 1998 through 2003.

Kauai County shows a total of 437 blood lead tests performed from 1998 through 2000; 346 tests were performed in 1993 alone, immediately after Hurricane Iniki devastated parts of the island. A strong effort was made by CLPP at the time to test all eligible children. Because of Hurricane Iniki, there has been major rebuilding of structures and as a result, a marked decrease in the number of older homes. The U.S. Census (2000) reports 117,333 structures built prior to 1979 (4,010 built before 1950).

Maui County, which includes Molokai and Lanai, has 28,865 structures built before 1979, with 6,708 built before 1950 (U.S. Census Bureau, 2000). Maui Island is currently addressing the issue of lead in drinking water in UpCountry. The median year residences were built in 1980.

The majority of the elevated levels from 1998 through June 2003 were between 10-20 mg/dL (335), followed by those between 20-30 mg/dL (57). Since 1998, 6 children have had elevated levels between 30 and 41 mg/dL with one undergoing chelation therapy. Of these 7 cases, 3 were in Hilo, 2 in Maui (with one lead poisoned in New York), and one in Kailua. It is difficult to compare with the period between 1993-1997 as reporting was done at different levels (see Table 3).
Challenges include:

- **Less than one third (1/3) of targeted children are screened each year.**
  Targeted children are those covered under the Med-QUEST Early Periodic Screening, Diagnosis and Treatment (EPSDT) program, which mandates blood lead screening for children at ages 1 and 2 years, or up to 6 years if not tested previously.

  Of the 32,850 children between 0-4 years old enrolled in Med-QUEST in 2002 (HEDIS 2002 Report), approximately 9,405 children were blood lead tested. This is approximately 29% of children covered by Med-QUEST. Using similar calculations, approximately 31% of children on Med-QUEST were screened in 2001. These are estimates as complete medical insurance data is not available from the laboratories or the Child Lead Risk Questionnaires (CLRQ). Besides Tripler Army Medical Center, Med-QUEST is the only major medical insurance carrier to cover blood lead testing.

- **Obtaining complete data has been problematic.**
  Laboratories do not report complete demographic information and the CLRQ are often incomplete. For example, data on ethnicity correlated with the total number of blood tests done are available for years 1993 through 1997 only, while data for ethnicity and children with elevated blood lead levels are available for 1996 to 2003. This data are presented in Table 4. Although there are many unknown ethnicities, both data sets reflect Hawaiians and Filipinos children with the higher numbers of elevated lead levels. County data is obtained by correlating results with the primary medical home data.

  Laboratories report lead screening results electronically to the Disease Investigation Branch (DIB). The DIB is exploring the use of a National Electronic Disease Surveillance System (NEDSS) program as their reporting system.

- **Lack of resources to provide follow-up on complete environmental assessment for children with levels > 20 mg/dl or chronic 15-19 mg/dL.** At this time, the mechanism for environmental assessment with sampling is not available. Families may privately pay for the service, but this is usually beyond the means of families who are economically challenged. The Med-QUEST EPSDT care coordinators are available to assist their families with children who have lead poisoning. The State Public Health Nurses are available to assist families who are not in the Med-QUEST program. The Noise/Indoor Air Quality Radiation Branch and the Hazard Evaluation and Emergency Response Branch are available for consultation.

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1 In the HEDIS report, the 5 year olds were included in the 5-9 year olds group, and therefore, could not included in the count.

2 Along with the approximately 9,405 screens by Med-QUEST, there were 167 screens performed at Tripler Army Medical Center and approximately 95 done by non-Med-QUEST coverage to equal a total of 9,667 for the year.
BACKGROUND INFORMATION ON LEAD

The discovery of lead and its toxic effects date back to thousands of years. Throughout history, there have been outbreaks of lead poisoning caused by contaminated food and drink. This, however, did not detract from its many uses (i.e. ceramic glazes, lead crystals, food seasoning, pipes for water systems, etc.).

The Industrial Revolution brought increased demands for lead for use in production. By the nineteenth century, occupational lead poisoning had become a serious problem. Children of the workers in lead-using industries also showed signs of lead poisoning. It was during this period that regulations were passed to protect workers and children.

However, it was not until the late 1960’s that lead poisoning was taken seriously as a health problem and steps were taken to eliminate lead from gasoline, paint, and other products. (Refer to Appendix A for a description of the laws and regulations.) Despite the efforts to reduce or remove lead in the environment, lead poisoning in young children continues to be a concern.
INFANTS AND TODDLERS AT RISK

The primary route of exposure for young children is through ingestion of lead dust from peeling and crumbling house paint via normal hand to mouth activities. Infants and toddlers, the age groups most at-risk, spend much of their time playing and crawling on the floor in their homes or in the dirt outside. They frequently put their hands and other objects such as toys in their mouths.

Lead dust is very fine and the small particles are difficult to clean from surfaces. This dust readily sticks to hands and other surfaces and is easily absorbed into children's bodies. In addition, children may inadvertently eat paint chips, chew on wood or other items that may be covered with lead paint or glaze and/or ingest lead dust deposited on floors, windowsills, etc. As children outgrow the hand-to-mouth habit and learn good hygiene habits, their risk of exposure lessens.

However, children who have special needs such as biological and developmental delays and those with pica (a condition in which the child eats inedible materials) may continue to participate in mouthing activities. These children require continuing monitoring for lead exposure.

The developing fetus is even more sensitive to lead than infant and toddlers. A mother with a high blood lead level risks exposing her unborn child to lead because lead crosses the placental barrier. The mother's blood lead level can be elevated if exposed to the same source as those that poison children, and by cultural practices such as geophagy (ingesting pottery).

Along with this, maternal malnutrition may contribute to lead poisoning of the fetus. If mother's diet is calcium-deficient, calcium may leach from her bones and teeth to provide needed calcium for the fetus. As calcium is released from the bone, lead stored there is also mobilized and enters the mother's blood stream, crosses the placenta and poisons the fetus. The developing fetus may have blood lead levels markedly higher than mother's level and therefore, damage occurs in utero.
HEALTH EFFECTS

The developing nervous systems of young children are more susceptible to the adverse effects of lead than older children and adults.

Although the symptoms of lead poisoning are usually not observable until the blood lead level reaches 50 mg/dL or higher, adverse effects are occurring. According to the CDC, blood lead levels as low as 10 mg/dL have been associated with the following health problems:

- Learning difficulties
- Behavior problems
- Reduced physical growth
- Impaired hearing

The President’s Task Force on Environmental Health Risks and Safety Risks to Children (2000) cites a study that estimates that a child loses two IQ points for each 10mg/dL increase in blood lead level.

The American Academy of Pediatrics (1993) cites research that associates lead exposure to weakness in attention, aggression, and antisocial or delinquent behaviors. Low to moderate lead exposure has also been associated with auditory problems (decreased acuity), abnormal postural balance, poor eye-hand coordination, longer reaction times and sleep disturbances. Therefore, even though symptoms are not present, the concern for neurological sequelae remains.

Symptoms associated with blood lead levels 50 mg/dL or higher include physical and behavioral changes such as:

- Irritability and fussiness
- Lethargy
- Poor appetite
- Abdominal pain
- Constipation

Very high blood lead levels (> 70 mg/dl) can cause acute encephalopathy resulting in altered mental status, coma, seizures, and even death.
SOURCES OF LEAD EXPOSURE

Lead-based paint and dust

Although lead-based paint has been banned in the United States since 1978, many old homes still have significant amounts of lead-based paint on their exterior, as well as their interior. Hawaii has approximately 52,347 houses built before 1950 when lead concentration in paint was the highest. Typically, the older the house, the more likely it is to contain paint with a higher concentration of lead.

Fine dust is created when lead-based paint peels, flakes, chips and/or rubbed off surfaces, windows, doorframes, and cabinet doors (those areas where friction occurs frequently). Also, unsafe abatement, maintenance and renovation practices (including dry scraping, sanding or using heat guns or chemical strippers to prepare the surface or remove paint) can create dust. Dry cleaning such as sweeping and using a regular vacuum cleaner can also stir up and spread dust.

Although the primary route of poisoning is ingestion, lead can also be absorbed through the skin or the respiratory tract by breathing it in.

Lead-contaminated soil

As the lead-based paint deteriorates, it may contaminate the soil around the home, garage, fences, etc. Soil near roads, old industrial sites, and previous gas station sites may still have remnants of lead. Also, certain pesticides that contained lead may have been previously used on the land. This soil can contaminate vegetables grown in it or children playing in the lead-contaminated dirt can get it into their mouths and track it into their homes.

Lead-contaminated water

Lead in drinking water is rarely a source of poisoning, but it can contribute to the child’s total lead exposure. It is significant if the water is used for baby formula or mixed with concentrated fruit juices. Water can be contaminated at its source or through leaching from water catchment’s systems, old lead pipes, or solder as it flows through the system. In 1986, the federal law restricted use of lead in pipes and other plumbing materials. (Refer to Appendix B)
Workplace

A variety of occupations use lead. These include, but are not limited to: construction, painting, automotive, smelting, carpet laying, soldering, battery recovery, plastics production, maintenance, and working at a firing range. Workers may bring lead home on their clothing, hair, shoes, and skin. The lead may rub off in the car, on furniture and flooring at home, and the family's laundry (if the worker's clothing is not washed separately), potentially exposing their children to lead poisoning.

Hobbies

Some hobbies can also pose a risk of lead exposure. They include: soldering, pottery/ceramics, stained glass, car/boat repair, and lead casting. NOTE: The Consumer Protection Safety Commission (under the Consumer Product Safety Act) has banned the sale of paint containing lead greater than 0.06% by weight. (See Appendix A for details)

Other sources

Lead has also been found in some home and folk remedies and imported medicines, ceramic dishes, solder on imported food cans, vinyl toys, vinyl mini-blinds and vertical blinds, and imported crayons and toys.

Your family could be ingesting some lead from drinking water if you have lead pipes or lead soldering in your plumbing system. It is odorless and can’t be removed through boiling.
PRIMARY PREVENTION

Traditionally, we have responded to childhood lead poisoning by “screening” children. Screening remains an important component to the program but primary prevention is essential to eliminate the sources of lead poisoning. There is a need for concerted efforts among various stakeholders such as families, communities, businesses, and public agencies in order to achieve this arduous task. This is the key to successfully eliminating childhood lead poisoning in Hawaii.

Utilizing the Spectrum of Prevention, a framework developed by Larry Cohen and Susan Swift from the Prevention Institute, as a guide in formulating a systematic comprehensive approach to lead poisoning prevention, the following activities are recommended:

Cohen and Swift suggest that there are 6 components toward achieving prevention:

1. Strengthening individual knowledge and skills
2. Promoting community education
3. Educating providers
4. Fostering coalitions and networks
5. Changing organizational practices
6. Influencing policy and legislation

**Strengthening individual knowledge and skills**

Providers should provide guidance to pregnant women, women of child-bearing age and breast feeding mothers as mothers with elevated lead levels pose a risk of poisoning to the fetus and newborn.

Anticipatory guidance should continue as infants grow and become more mobile in exploring their environment. Information is critical when children are 3-6 months of age, and again when they are 12 months of age. Parental awareness at these times may prevent lead exposure and the increase in blood lead levels that often occur in the child’s second year of life.

Guidance may include information on:

- Hazards of deteriorating lead-based paint in older housings
- Methods of controlling lead hazards (such as wet mopping, importance of keeping paint in good condition, washing child's hands often)
- Hazards of scraping paint and renovating pre 1978 homes
- Other lead sources

**Promoting community education**

- Education efforts should assist communities in identifying neighborhoods, houses, and apartment buildings that contain lead-based paint and organize programs for clean up. These efforts will require the collaboration of housing groups, real estate agencies, community groups, church groups, public health and other agencies, as well as parents and caregivers of children who have been exposed to lead.
• Promote the use of culturally and educationally appropriate materials. Representatives of the target audience will be asked to critique materials before they are used in the community.
• Dissemination of information should be done in a way that takes into account each culture’s unique way of receiving and utilizing information. Representatives from each cultural group can help with dissemination strategies.

**Educating Providers**

Provide ongoing education to all those involved in various aspects of childhood lead poisoning including:

• Updates on lead prevention and treatment
• Nutrition
• Effects on child development
• Environmental treatment (interim control and permanent abatement)

**Fostering Coalitions and Networks**

• Develop comprehensive strategies for communities by helping to assess the community’s risk and its existing resources and needs.
• Develop activities to meet its needs and to evaluate its efforts. The coalition can help the communities obtain resources as needed.
• Work with other groups that serve children and parents (such as churches, childcare/preschool centers, schools, parks and recreation, and other social service organizations) to help identify risk areas and coordinate activities.

**Changing organizational practices**

Encourage partners to pool resources and coordinate efforts to identify those at risk, help homeowners and landlords reduce lead hazards, and ensure that public and private housing is lead-free.

**Influencing policy and legislation**

Work with legislators in assuring that laws are enforced and those issues that require policy changes are included. These changes may include the necessary laws and regulation to clean up unsafe situations.
PART I:
APPENDICES
Appendix I-A: Laws and Regulations

In 1971, President Nixon signed into law the Lead Based Paint Poisoning Prevention Act (LBPPA) (PL 91-695) which established a federal agenda to eliminate lead poisoning. The effects of this act led to a marked decrease in mortality and acute lead poisoning cases.

In 1972, Housing and Urban Development (HUD) published regulations prohibiting the use of lead based paint in HUD associated housing. An amendment to LBPPA instructed HUD to abate all HUD associated housing built prior to 1950.

In 1975, leaded gasoline was banned from use in post-1975 vehicles.

In 1977, the Consumer Product Safety Commission (under the Consumer Product Safety Act) banned the sale of lead based paint (lead content greater than 0.06% by weight) and the use of it where consumers have direct access to painted surfaces (i.e. toys, playgrounds, schools).

A court case in 1983 (Ashton vs. Pierce), ruled that HUD regulations were deficient in not considering intact paint as an immediate hazard (only deteriorating paint was considered hazardous).

In 1986, the Safe Drinking Water Act prohibited the use of lead pipes and solder in drinking water plumbing systems.

In 1987, Congress again amended the LBPPA to include intact paint in the definition of immediate and, among other items, established 1978 as the cutoff year for housing developments and required random sampling of pre-1978 housing developments.

The Stewart B. McKinney Homeless Assistance Amendments Act (1988) further amended the LBPPA to require testing for all public housing units.

In 1991, the U.S. Department of Health and Human Services called for the elimination of childhood lead poisoning and continues this effort.

The Children’s Health Act of 2000 (Title XXV – Early Detection and Treatment Regarding Childhood Lead Poisoning) calls for development of national guidelines for the uniform reporting of all blood lead level results to the health department.
Lead in drinking water is rarely the only source of poisoning, but it can contribute to the child’s lead exposure. It is significant if the water is used for baby formula or mixing with concentrated fruit juices.

Lead does not occur naturally in any of the sources (wells, springs, surface water intakes) that serve public water systems. Sources and systems generally have had non-detectable levels of lead. Lead has been found in individual rainwater catchment’s systems (which are not public water systems) which use leaded components such as lead-headed nails, lead flashing, and lead-containing coatings or liners for storage tanks. So far, lead in public drinking water systems have been found to come from building or property plumbing. Commonly, newer piping with brass fixtures or fittings, water piping that has been used as an electrical ground, and older pipes heavily soldered with leaded solder or water that has stood in pipes for an extended period of time (days, weeks or months) in contact with lead-containing pipe components have been the sources of lead in people’s drinking water.

Flushing is usually an effective way of reducing or eliminating the lead levels in the water in buildings. This should be done whenever water has been able to stand in the pipes for more than 6 hours. The DOH’s experience has been that as long as you are able to flush long-standing water out of your piping, lead values can be greatly reduced or eliminated.

Lead is regulated in drinking water systems through application of state and federal regulations. The Safe Drinking Water Branch (SDWB) of the DOH administers these regulations in Hawai‘i. These rules require that water systems test a specific number of newer homes for lead and comply with an action level. Currently, Hawai‘i has an action level of 15 micrograms per liter (µg/l) or parts per billion for the first flush water from homes. If this level is exceeded by more than 10% of the homes tested, the system must take action to reduce the aggressiveness of the water. This will reduce the water’s tendency to pickup lead from plumbing components.

State law and county plumbing ordinances currently prohibit the installation of many lead-containing components in drinking water systems. A recent amendment to state law (2001) now prohibits unapproved plumbing fittings and fixtures.

If people feel the need to test water for lead, they should contact the SDWB for information on commercial laboratories that have been approved for lead analyses in drinking water. We recommend that people consider taking two samples from their kitchen or other tap most used for consumption. One sample would be to test the “first flush” in the pipes for water that has stood for more than six hours. This sample would be taken by catching the first water out of the tap after the six-hour standing time. The second sample would be a sample from the same tap after five minutes of running the water. These two samples generally show whether you have had a lead problem and one possible solution to it.
Appendix I-B: Lead Contaminated Drinking Water

To reduce the possible concentration of lead in drinking water:

1. Always flush long-standing water from the pipes before using the water for consumption. A general guide to flushing is to run the water until it reaches a constant cool temperature.

2. Never use water from the hot water tap for consumption. Hot water is more active than cold water, and therefore, has more potential to pick up lead and other materials. Always take cold water and heat it to the desired temperature.
Table 1: Total number of blood lead tests performed and percent elevated from 1993 to 2002
Table 2: The number of blood lead tests by county

*Note: 2003 data includes January through June 30
Table 3: Number of Elevated Blood Lead Levels from 1993 to 2003

CDC changed the surveillance elevated blood lead level ranges in 1998 from 10 to 14.9 and greater than 15, to a three tiered system (10 to 19, 20 to 30 and greater than 30).
Table 4: Ethnicities of children with elevated blood lead levels

Years 1996, 1997 and 2003 are partial year data.
Figure 1: Number of unduplicated blood lead tests correlated to primary care providers/health centers done on Oahu from 1998 through 2003. The number of primary care providers ordering the tests is in parenthesis and the number of clinics is indicated with a “c”. Those results without provider names, misspellings that could not be associated with a provider name and those providers who ordered less than 3 tests were not included in the count. The total number of counted tests is 15,056.
Figure 2: Number of unduplicated blood lead tests correlated to primary care providers/health centers done on the island of Hawaii from 1998 through 2003. The number of primary care providers ordering the tests in parenthesis and the number of clinics is indicated with a “c”. Those test results without provider names, misspellings that could not be associated with a provider name and those providers who ordered less than 3 tests were not included in the count. Total number of counted tests is 6,644.
Molokai – 119 (1); Lanai – 3

Figure 3: Number of unduplicated blood lead tests correlated to primary care providers/health centers done in Maui County from 1998 through 2003. The number of primary care providers ordering the tests is in parenthesis and the number of health centers is indicated with a “c”. Those results without provider names, misspellings that could not be associated with a provider name and those providers who ordered less than 3 tests were not included in the count. Total number of counted tests is 867.
Figure 4: Number of unduplicated blood lead tests correlated to primary care providers/health centers done on the island of Hawaii from 1998 through 2003. The number of primary care providers ordering the tests in parenthesis and the number of clinics is indicated with a “c”. Those test results without provider names, misspellings that could not be associated with a provider name and those providers who ordered less than 3 tests during this time period were not included in the count. Total number of counted tests is 84.
Appendix I-E: References


PART II:
RECOMMENDED GUIDELINES
FOR HEALTH CARE PROVIDERS
PRIMARY PREVENTION

Health care providers should provide guidance to pregnant women, women of child-bearing age and breast feeding mothers as mothers with elevated lead levels pose a risk of poisoning to the fetus and newborn.

Anticipatory guidance should continue as infants grow and become more mobile in exploring their environment. Information is critical when children are 3-6 months of age, and again when they are 12 months of age. Parental awareness at these times may prevent lead exposure and the increase in blood lead levels that often occur in the child’s second year of life.

Guidance may include information on:

- Hazards of deteriorating lead-based paint in older housings
- Methods of controlling lead hazards (such as wet mopping, importance of keeping paint in good condition, washing child’s hands often)
- Hazards of scraping paint and renovating pre-1978 homes
- Other lead sources

SECONDARY PREVENTION

Screening is an essential step in identifying and treating children with lead poisoning.

The following recommendations are provided for all Hawai‘i health care providers. It incorporates the CDC guidelines, the Med-QUEST requirements, and screening for non-Med-QUEST participating children. It does not mandate screening nor are funding resources for screening provided.

Child Lead Risk Assessment

The questions provide a guide for the health care professional to assess lead exposure risk to the child. All children, around the ages of 12 and 24 months (or 25-72 months if not previously done), should be screened for lead risk exposure using the Child Lead Risk Questionnaire (see Appendix II-A) as a guide. Studies by CDC have shown that blood lead levels peak around 24 months of age and diminish after 72 months of age.

Blood lead screening is suggested when:

- Any risk factor is positive or unknown
- A child’s likelihood of exposure has increased
- An older child with special needs has excessive mouthing behavior
- An older child is known to have a high exposure to lead
- Parents have knowledge of a child’s lead exposure and request screening
- Child has unexplained symptoms or signs that are consistent with lead poisoning

If any risk factor is positive, then at least one blood lead test should be considered.

Health Insurance Coverage of Laboratory Test

All children covered by Med-QUEST/ Medicaid insurance should have their blood lead level...
screened according to the EPSDT program requirements: at 12 and 24 months of age; or between 25 and 72 months of age if the child has not been previously tested. Med-QUEST/Medicaid covers blood lead testing.

Some private medical insurance plans will pay for lead screening. However, because there are so many variables in plans, the child’s provider/parent must check the plan to determine coverage. If the lab test is not covered, the parent is responsible to pay for the blood lead test.

For children who are not covered by medical insurance, the parent/caregiver is responsible for payment.

Note: A discounted rate for blood lead testing is available through Clinical Laboratories of Hawaii (CLH) and Diagnostic Laboratory Services, Inc. (DLS). It is important to inform the family that the test must be paid for at the time of service to get the discount. The discount applies to the initial and follow-up testing as long as it is paid for at the time of service. Contact CLH at (808) 677-7999 and DLS at (808) 589-5100 for more information.

MEDICAL ASSESSMENT AND CASE MANAGEMENT

Blood Lead Screening

Children can be screened by a measurement of either a venous or capillary (finger stick) blood specimen. Venipuncture is recommended because it is a more accurate procedure with fewer false positive results, but it is more invasive.

The capillary draw is less expensive and less invasive, but tends toward more false positives. Therefore, the capillary draw must be followed by a confirmatory venous draw when the capillary test result is >10 mg/dL.

Confirmatory Blood Lead Testing

Results < 10 mg/dL are considered in the normal range and no further action is required at the time. However, lead levels on the high side of normal, for example between 6 mg/dL to 9 mg/dL, may indicate a need for further exploration and education with the family and:

- Re-screen at 24 months of age, or
- If exposure to lead increases

Any screening level above 10mg/dL by a capillary sample should be confirmed with a venous sample. Refer to the table below for guidelines (CDC, 1997).
If result of capillary screening (mg/dL) is:

<table>
<thead>
<tr>
<th>Diagnostic Venous blood lead level (mg/dL)</th>
<th>Early Follow-up (first 2-4 tests after identification)</th>
<th>Late follow-up (after BLL begins to decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>3 months*</td>
<td>6-9 months</td>
</tr>
<tr>
<td>15-19</td>
<td>1-3 months*</td>
<td>3-6 months</td>
</tr>
<tr>
<td>20-24</td>
<td>1-3 months*</td>
<td>1-3 months</td>
</tr>
<tr>
<td>25-44</td>
<td>2 weeks - 1 month</td>
<td>1 month</td>
</tr>
<tr>
<td>&gt;45</td>
<td>As soon as possible</td>
<td>Chelation with subsequent follow-up</td>
</tr>
</tbody>
</table>

*The higher the screening BLL, the more urgent the need for a diagnostic test.

Exception to the recommended schedule:
If a child with an elevated level is less than 12 months old, or if there is reason to believe that the blood lead level may be increasing rapidly, consider performing the diagnostic test sooner than indicated in the above schedule.

Follow-Up Venous Blood Lead Testing

The table below serves as a guide for the frequency of testing after a positive diagnostic test (Centers for Disease Control and Prevention, 2002).

*Health care providers may choose to repeat blood lead tests on all new patients within a month to ensure that their BLL level is not rising more quickly than anticipated.
Clinical Management Recommendations

Summary of Recommendations for Children with Confirmed (Venous) Elevated Blood Levels (Centers for Disease Control and Prevention, 2002)

<table>
<thead>
<tr>
<th>Blood Lead Level (mg/dL)</th>
<th>10 –14</th>
<th>15-19</th>
<th>20-44</th>
<th>45-69</th>
<th>≥70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead education</td>
<td>Lead education</td>
<td>Lead education</td>
<td>Lead education</td>
<td>Lead education</td>
<td>Hospitalize and commence chelation therapy</td>
</tr>
<tr>
<td>- Dietary</td>
<td>- Dietary</td>
<td>- Dietary</td>
<td>- Dietary</td>
<td>- Dietary</td>
<td></td>
</tr>
<tr>
<td>- Environmental</td>
<td>- Environmental</td>
<td>- Environmental</td>
<td>- Environmental</td>
<td>- Environmental</td>
<td></td>
</tr>
<tr>
<td>Follow-up blood lead monitoring</td>
<td>Follow-up blood lead monitoring</td>
<td>Follow-up blood lead monitoring</td>
<td>Follow-up blood lead monitoring</td>
<td>Follow-up blood lead monitoring</td>
<td>Proceed according to actions for 45-69 mg/dL</td>
</tr>
<tr>
<td></td>
<td>Proceed according to actions for 20-44 if:</td>
<td>Complete history and physical exam</td>
<td>Lab work:</td>
<td>Lab work:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- A follow-up BLL is in this range at least 3 months after the initial venous test or</td>
<td>- Hemoglobin or hematocrit</td>
<td>- Hemoglobin or hematocrit</td>
<td>- FEP or ZPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- BLLs increase</td>
<td>- Iron status</td>
<td>- Iron status</td>
<td>- FEP or ZPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environmental investigation</td>
<td>Environmental investigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lead hazard reduction</td>
<td>Lead hazard reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neuro-developmental monitoring</td>
<td>Neuro-Developmental monitoring</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Abdominal X-ray (if particulate lead ingestion is suspected) with bowel decontamination if indicated</td>
<td>Abdominal X-ray with bowel decontamination if indicated</td>
<td>Chelation therapy</td>
<td></td>
</tr>
</tbody>
</table>

Part II: Recommended Guidelines for Health Care Providers
The following are not recommended at any blood lead level:

- Searching for gingival lead lines
- Testing of neurophysiologic function
- Evaluation of renal function (except during chelation with EDTA)
- Testing of hair, teeth, or fingernails for lead
- Radiographic imaging of long bones
- X-ray fluorescence of long bones

**Clinical Evaluation**

The following evaluation recommendations are adopted from the CDC guidelines:

**Medical history** - Discuss symptoms, mouthing activities, pica, previous blood lead levels, and family history of lead poisoning.

**Environmental history** - Investigate potential sources of lead exposure: age, condition, remodeling of home or other places that child spends time (day care/preschools, secondary homes), occupation/hobby histories of adults, and other possible sources (such as cultural practices).

**Nutritional status** - Identified nutritional deficiencies should be corrected. Evaluate child’s iron status (deficiency in calcium may increase lead absorption). A referral to a nutritionist may be indicated. Inquire about WIC/Food Stamp participation. Counsel parent/caregiver in providing regular meals and snacks that are high in iron, vitamin C, and calcium.

**Physical examination** - Attention should be paid to neurological, psychosocial and language development. Developmental progress should be monitored closely and referrals made as appropriate.

Lead education should include:

- Interpretation of blood test result
- Information on potential adverse effects of elevated blood lead levels
- Exploring possible sources of exposure and ways to reduce exposure
- Directions and importance of proper cleaning to remove lead dust floors, window sills and other surfaces, and the ineffectiveness of dry methods of cleaning
- Instructions on the importance of good nutrition in reducing the absorption and effects of lead, such as adequate calcium and iron and regular meals
- Stress the importance for follow-up testing to monitor blood lead-level
- Assist with environmental investigation as indicated
- Emphasize the hazards of improper removal of lead based paint. Particularly hazardous are open flame burning, power sanding, water blasting, chemical stripping, and sanding and scraping

The health care provider should discuss both the short-term and long-term management of elevated blood lead levels.

A clinical evaluation may be complemented by follow-up activities in the home with the assistance of support services (i.e., Public Health Nurse or environmental investigator).
Home Visit

Assessment should include the following:

- Social assessment including other places that the child may spend time (e.g., grandparents, child care facility)
- Family assessment hobbies, previous living setting, and activities
- Child assessment: Activities, playmates, and developmental status
- Reinforce hygiene and nutrition

Environmental investigation may be indicated:

- Home assessment and sampling/XRF by certified assessor

Medical Treatment

Chelation is the recommended therapy for a child with a blood lead level > 45 mg/dL. It should, however, be used with caution and PCPs’ should consult with an expert in the management of lead chemotherapy. Medical consultation from a toxicologist can be obtained through the Poison Help Line (1-800-222-1222) or names of accessible experts can be obtained from the Lead Poisoning Prevention Branch at CDC (404-498-1420)

Abatement/Remediation

Need for abatement/remediation is dependent on the findings and recommendations of the environmental assessment. Certified contractors are available in Hawaii.

The responsibilities for abatement/remediation is dependent upon the type of residence where lead is found:

- **Child Care Facility:**
  Concerns should be directed to the Child Care Licensing Program of Department of Human Services

- **State (HCDCH) or City and County Housing units:**
  State and C&C authorities should be contacted. By federal law, they are required to remove the family from the unit and abate

- **Section 8 units (State and City and County):**
  For tenant-based units, the landlord is responsible for abatement. HCDCH checks the home for lead prior to approval for rental

- **Privately owned:**
  The owner of the home is responsible

- **Private rentals:**
  Landlord is responsible. Disclosure law applies
PART II:
APPENDICES
# Appendix II-A: Child Lead Risk Questionnaire

## CHILD LEAD RISK QUESTIONNAIRE
(For children six months up to six years of age)

### CHILD:
- **Name:**
  - Last
  - First
  - MI
- **Address:**
- **City:**
  - Zipcode:

### PARENT/GUARDIAN:
- **Name:**
  - Last
  - First
  - MI
- **Home phone:**
- **Work phone:**

### Health Insurance:
- [ ] Med/QUEST: (Specify plan)
- [ ] Private
- [ ] None

### Ethnicity (check all that apply):
- [ ] African American
- [ ] Chinese
- [ ] Hispanic
- [ ] Pacific Islander
- [ ] Native American
- [ ] Filipino
- [ ] Japanese
- [ ] Other Asian
- [ ] Caucasian
- [ ] Hawaiian
- [ ] Korean
- [ ] Other

### Is the child enrolled in the WIC program?
- [ ] Yes
- [ ] No
- [ ] Unknown

## RISK FACTORS: Blood lead testing is required for all QUEST children and is recommended for other children if there are any “Yes” or “Unknown” risk factors.

1. Has the child had an elevated blood lead in the past or have a sibling/playmate with lead poisoning?
   - [ ] Yes
   - [ ] No
   - [ ] Unknown

2. Does the child live in or regularly visit a home or place built before 1978?
   - [ ] Yes
   - [ ] No
   - [ ] Unknown

   Is it being or has been recently remodeled or renovated?
   - [ ] Yes
   - [ ] No
   - [ ] Unknown

3. Does anyone who spends time with the child have a job and/or hobby in:

<table>
<thead>
<tr>
<th>JOB</th>
<th>HOBBY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive repair/car batteries</td>
<td></td>
</tr>
<tr>
<td>Ceramic/pottery using lead glaze</td>
<td></td>
</tr>
<tr>
<td>Fishing sinkers/fishing activities/boat repair</td>
<td></td>
</tr>
<tr>
<td>Painting/electrical/plumbing/soldering/welding</td>
<td></td>
</tr>
<tr>
<td>Remodeling/renovation/building demolition</td>
<td></td>
</tr>
</tbody>
</table>

### Physician Name:

### Address:

### Phone Number:

### Program use only

| Test Date: __/__/__ | Test Result: __ μg/dL |

**Physician:** Send original copy to lab with patient. Retain yellow copy for your records

**Laboratories:** Return form to Maternal and Child Health Branch (MCHB), Childhood Lead Surveillance

741-A Sunset Ave. Rm. 204, Honolulu, HI 96816

Phone: 733-9044   Fax: 733-9032

CLS-001 Ver: 7/03
## Appendix II-B: Flow Sheet

### Childhood Lead Poisoning Screening/Testing Recommendations for Health Care Providers (following AAP Policy, CDC Guidelines and EPSDT Mandate)

**Child Lead Risk Assessment:** done at 9-12 months of age and at 24 months of age (or at 36-72 months if not previously done) and as risk level changes

Blood lead test is indicated if:
- Child is covered under Med-QUEST or
- Assessment is positive for risk factors
  (coverage by private insurance varies. Check with laboratory for discount if fee paid at time of blood draw.)

**Assistance with case management:** Call EPSDT Coordinator of medical plan for children covered under Med-QUEST or Call the district Public Health Nursing Office for children without insurance or those covered by private insurance

### If Blood Lead Level (BLL) is Elevated (>10 mcg/dL) then Obtain a Confirmatory Venous Sample

Repeat venous draw for confirmation is necessary as capillary draws have higher rates of false positive. If child is less than 12 months old, or if there is reason to believe that the BLL is rising rapidly, an earlier confirmatory BLL may be indicated.

<table>
<thead>
<tr>
<th>Screening test result: (mcg/dL)</th>
<th>then perform a confirmation test within:</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>3 months</td>
</tr>
<tr>
<td>20-44</td>
<td>1 week - 1 month</td>
</tr>
<tr>
<td>45-59</td>
<td>48 hours</td>
</tr>
<tr>
<td>60-69</td>
<td>24 hours</td>
</tr>
<tr>
<td>&gt; 70</td>
<td>Immediately as an emergency lab test</td>
</tr>
</tbody>
</table>

If confirmatory BLL is elevated then follow recommended schedule for follow-up blood lead testing

**Medical management includes follow-up blood lead testing.**

<table>
<thead>
<tr>
<th>Venous BLL: mcg/dL</th>
<th>Early follow-up (first 2-4 tests after confirmation)</th>
<th>Late follow-up (after BLL begins to decline)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14</td>
<td>3 months</td>
<td>6-9 months</td>
</tr>
<tr>
<td>15-19</td>
<td>1-3 months</td>
<td>3-6 months</td>
</tr>
<tr>
<td>20-24</td>
<td>1-3 months</td>
<td>1-3 months</td>
</tr>
<tr>
<td>25-44</td>
<td>2 weeks - 1 month</td>
<td>1 month</td>
</tr>
<tr>
<td>&gt; 45</td>
<td>As soon as possible</td>
<td>Chelation with subsequent follow-up</td>
</tr>
</tbody>
</table>

### If BLL is: mcg/dL

**Summary of Medical Management Recommendations for Elevated Blood Lead Levels**

Refer to Childhood Lead Poisoning Prevention Guidelines for more details

<table>
<thead>
<tr>
<th>BLL in mcg/dL</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 10</td>
<td>No action required</td>
</tr>
<tr>
<td>10-14</td>
<td>Provide nutritional and environmental lead education.</td>
</tr>
<tr>
<td>15-19</td>
<td>Provide nutritional and environmental lead education. Proceed according to actions for 20-44 if a follow-up BLL is in this range at least 3 months after initial venous test or BLL increase</td>
</tr>
<tr>
<td>20-44</td>
<td>Provide dietary and environmental lead education + complete history and physical exam + hemoglobin or hematocrit, iron status + abdominal x-ray (if particulate lead ingestion is suspected) with bowel decontamination if indicated + neurodevelopmental monitoring + environmental investigation with lead hazard reduction</td>
</tr>
<tr>
<td>45-69</td>
<td>Follow management for 20-44 + a complete neurological exam + lab work to include FEP or ZPP + Chelation therapy</td>
</tr>
<tr>
<td>= or &gt; 70</td>
<td>Hospitalize the child and begin chelation treatment immediately. Follow management of children with BLL's between 45-69.</td>
</tr>
</tbody>
</table>

### References:

- American Academy of Pediatrics (Committee on Environmental Health), Policy Statement: Lead Exposure in Children: Prevention, Detection, and Management, October 2005
- CDC’s Advisory Committee on Childhood Lead Poisoning Prevention, Managing Elevated Blood Lead Levels Among Young Children, 2002
- CDC, Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials, 1997
- Hawaii's Early & Periodic Screening, Diagnosis & Treatment Periodic Screening Guidelines
Appendix II-C: RESOURCES
### Appendix II-C: Resources

<table>
<thead>
<tr>
<th>Agency</th>
<th>Purpose</th>
<th>Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Care Licensing/ Dept. of Human Services</td>
<td>Inspects childcare centers when there is peeling, cracking or flaking paint. Goal is to keep children safe in the childcare setting. Centers are required to abate any lead hazard.</td>
<td>Dept. of Human Services Benefit, Employment and Support Services Division, Child Care Licensing Program (808) 586-7064</td>
</tr>
<tr>
<td>Consumer Product Safety Commission (CPSC)</td>
<td>Works to reduce the risk of injuries and deaths from consumer products.</td>
<td>Honolulu Field Office: (808) 733-8710 To report an unsafe product or a product-related inquiry, call CPSC Hotline at (800) 638-2772 or (800) 638-8270 for the hearing/speech impaired. Website: <a href="http://www.cpsc.gov">www.cpsc.gov</a></td>
</tr>
<tr>
<td>Early &amp; Periodic Screening, Diagnosis &amp; Treatment (EPSDT)</td>
<td>Component of Medicaid/QUEST health insurance to provide children with regular screening and treatment services.</td>
<td>Med-QUEST: (808) 692-8110</td>
</tr>
<tr>
<td>Environmental Protection Agency/Dept. of Health TSCA-Lead Program</td>
<td>Accredits training providers and certifies individuals engaged in lead abatement activities; Implements lead disclosure rule (1018); Implements residential remodeling and renovation rule (TSCA 406)</td>
<td>(808) 586-5800</td>
</tr>
<tr>
<td>Food &amp; Drug Branch/ Dept. of Health</td>
<td>Holds monthly screening at which the public can bring in their personal ceramic dishes to be screened for leachable lead; Does periodic surveys of ceramic dishes sold at retail; Identifies food containers that may contaminate foods with lead.</td>
<td>(808) 586-4725</td>
</tr>
<tr>
<td>Hawai’i Keiki Information Service System (H-KISS)</td>
<td>Information and referral to early intervention services for children with developmental delays, special health care needs.</td>
<td>Oahu: (808) 955-7273 Neighbor Islands: 1-800-235-5477 (Voice and TDD available)</td>
</tr>
<tr>
<td>Poison Help Line</td>
<td>Provide general information on lead poisoning. Can provide consultation with a medical toxicologist if needed for treatment of lead poisoning.</td>
<td>1-800-222-1222</td>
</tr>
<tr>
<td>Hazard Evaluation &amp; Emergency Response Office</td>
<td>Provide information on lead and other heavy metal poisoning and environmental assessment.</td>
<td>(808) 586-4249</td>
</tr>
<tr>
<td>Hawaii Public Housing Administration</td>
<td>Provides low income and public housing, low-income elderly housing and Section 8. Federal law mandates that units be lead free.</td>
<td>Housing Information Office, (808) 587-0597</td>
</tr>
<tr>
<td>Maternal &amp; Child Health Branch, Dept. of Health</td>
<td>Provides information and guidance on childhood lead poisoning issues.</td>
<td>(808) 733-4056</td>
</tr>
<tr>
<td>Safe Drinking Water Branch, Environmental Management Division, Dept. of Health</td>
<td>Regulate public water systems to assure compliance with state and federal lead action levels.</td>
<td>(808) 586-4258</td>
</tr>
<tr>
<td>Women, Infants and Children (WIC)</td>
<td>Provides nutrition counseling and intervention</td>
<td>On Oahu (808) 586-8175 Neighbor Islands 1-888-820-6425</td>
</tr>
<tr>
<td>U.S. Dept. of Housing and Urban Development</td>
<td>Provide guidance on general regulations; Provide information to realtors.</td>
<td>Community Planning Division (808) 522-8175</td>
</tr>
</tbody>
</table>
Appendix II-D: References


Keep Your Keiki LEAD-FREE