

FAILURE TO PROTECT OUR MILITARY FAMILIES (CONTAMINATED SOILS AT HICKAM – JOINT BASE)

Our military make the highest sacrifice to serve our country and they deserve the best care we can provide for them and their families. We hear that the government is taking efforts to increase the quality of life for our military and their families. Have they really done that? We should be ashamed of the “new residential housing” provided for our military families and the disastrous exposure to their children to harmful chemical hazards. Military housing projects in Hawaii are constructed with soils contaminated with carcinogens in the front and back yards of their homes. This paper provides the questions and the news of the travesty for the children of our military families.

The military has provided agreements or contracts with the private sector to build and manage new housing for our military families and in return they will guarantee rental income. The military provides some funding for these efforts. The first question is, **(1) Why has the contractor(s) provided housing that military families must live on, in and around contaminated soils?**

Background: It was an accepted practice to spread highly toxic pesticides in and around the old military homes to address the termite and bug problems. The practice included the pouring of these pesticides on the ground, injecting them in and around the foundations, and other areas. In 1988 the Environmental Protection Agency (EPA) banned the use of a number of these pesticides because many of them were classified as carcinogens, i.e., causing or could cause cancer. Prior to the construction the government and the contractors were required to sample the soils and determine the presence and levels of concentration of these toxic chemicals. If they were present the contractor had to remove them from the area or ensure they were adequately encapsulated.

We know that there were many housing construction projects by the government using various contracting methods. In 2006 a contractor refused to spread contaminated soils around the residential area at the Kaneohe Marine Base and issued a public statement. The contractor tried to fight this disastrous and willful disregard of the exposure to the military families and was ultimately threatened and his business destroyed. The end result is the construction of 212 residential units for the enlisted marines and their families on contaminated soils. The contamination of residential housing areas for the military families has been going on at least since 2005, that we know of.

During the course of construction the soils were not adequately sampled or managed and the contaminated soils were spread out over the project. After these toxic chemicals were identified the contractor realized that the cost to properly handle the

contaminated soils was high. The contractor and the government chose to ignore the proper handling of the contaminated soils and ultimately they both managed to develop a series of technical guidance documents that would justify leaving the contaminated soils in place. Some general information about the contamination and the exposure might be provided to the residents.

The dilemma for the military families is numerous and they are caught in the corrupt system of the contractor, the government, politics, and of course big money. How do they get information, who will provide it, how is it interpreted, who can they go to for help and protection? Here are some of the prevalent dilemmas for the military families:

- The families are not truthfully informed of the presence of the contaminated soils. They are told it is there but it is safe. They have no knowledge of the concentration, exposure to their children, etc.
- Even if they are informed with the total truth they are not given any alternatives. The bottom line is that they accept this housing or they can look for rental units outside of the base and pay a higher rent.
- The social structure on base for the young military families is critical and essential for the development and survival of these families. Making them move out into a different, expensive, strange and remote area is threatening for them.
- If they were knowledgeable of the contaminated soils and the impact to their children, who would they complain to? This is a military structure and these are enlisted members of the military. Can they really complain without fear of discrimination and retaliation?
- If the government and the contractor are correct that exposure to these toxic chemicals is safe then what information is provided or collected to verify this safety? There is none.
- In the event their children become sick now or in the future what information can these families provide to their physicians? Physicians must be given information about the exposure to ensure this exposure is included in any medical diagnosis and treatment. There is no information available and this information is not provided to the families or the medical community. The military families are completely in the dark.

Limits and Dealing with the Contaminated Soils

The scientific community has produced volumes of technical information relative to the toxic chemicals and the human exposure. One of the basic fundamentals to keep in mind is society's acceptance of risk for cancer. The acceptable risk is one in one million or 1×10^{-6} . This means that full time exposure at these levels will produce a

chance of cancer of one in one million. The limits for environmental action levels (EALs) are supposed to be based on this fundamental acceptance of risk. The State of Hawaii Department of Health and the Environmental Protection Agency (EPA) are the regulators that we rely on to ensure the safer exposure to our military families. The second question, **(2) Why is the State and EPA allowing the contamination of housing projects to be constructed?**

Dealing with the contaminated soils means that we remove the soil or encapsulated it properly so that human exposure is eliminated. This simple fact was established many years ago when environmental action levels for the presence of these contaminants was established by EPA. In general these actions levels are the point at which some type of action is required because of the presence of the contaminant.

Hickam Joint Base Residential Housing Project(s)

The old housing at Hickam was replaced over the last several years. During the construction period which included the 2006 timeframe the contractor and the government were aware of the presence of chlordane, heptachlor, heptachlor epoxide, dieldrin and aldrin and perhaps others. Their construction continued to spread the contaminated soils around the various housing projects. Complaints by workers who were experiencing illnesses from the exposure to these toxic chemicals were ignored. It should be noted that a lawsuit filed by one of these workers was quickly settled to avoid the public scandal. The third question, **(3) If the exposure to the workers created illnesses what is the impact of exposure to the residents, especially the children?**

The State of Hawaii, Department of Health (HDOH) was involved with the investigation of the intentional contamination of the residential housing sites. Through their investigation, negotiation, politics, and whatever else the HDOH decided to resolve the contractor and the government's intentional disregard for the exposure to the military families. The solution developed by the government, contractor and the HDOH is a similar one developed by the Navy for the Kaneohe Marine housing project. In a nut shell the solution includes:

- Determine a range of concentration of the contaminated soils through soil sampling. Once it is determined that the concentration is over the environmental action levels (EALs) a plan can be developed to save money at the cost of the military families.
- After the area of contamination was determined to be a large majority of the exposed housing areas, i.e., the front and back yards of the homes the cost to remove the contaminated soils or encapsulate the contamination was determined to be too excessive. An alternative to exposing the military families to an unwarranted level of risk was needed.

- The alternative is a plan for a human health risk assessment (HHRA). This is a process where a “risk assessment” is developed to risk away, on paper, the risk to the military families. In no way does it afford any protection from the exposure to the toxic chemicals for any of the military families.
- The HHRA determines that the risk of exposure to the military families is minimal because they are only exposed for 6 years, i.e., the duration of the military assignment to the area. Based on this rotation and the mathematical manipulation of the numbers the risk assessment can determine that the area is “safe”.
- The HHRA can be a document or a guidance issued by the HDOH thereby eliminating or mitigating the liability to the contractor and the government.

The end result is the exposure of the toxic chemicals to the military families without their knowledge or consent by changing the EALs and saving millions of dollars for the contractor and the government at the cost of the military families.

The Mechanics of the Justification and the Costs

The purpose of the HHRA is supposed to be a scientific study of the conditions, situation, and the impact to the environment and the people and their families. The HHRA is not intended by any means to be a “solution” to a problem that is costly. The HHRA conducted by the HDOH, the government and the contractor only serves one purpose – it saves money. The HHRA is not conducted properly and it does not comply with the national directives and guidance for the exposure of people to carcinogens. The fourth question, **(4) Why is this document not made public and public hearings conducted?**

A rough cost estimate to show the cost of doing it right and the savings the HHRA allows is provided for discussion. If the right way is accomplished the contaminated soils would be removed and replaced with a protective barrier and a clean cover. This would mean at least 18” of contaminated soils would be removed, a protective barrier installed and clean soil placed on top of it. A rough ball park of the cost based on rough estimated show that there is a significant savings to the contractor and the government. See table below.

BALL PARK FIGURES TO DO IT THE RIGHT WAY	COSTS
The open areas where clean topsoil would be required is ~900,000 square feet by 18" deep to cover the chlordane contamination. The cost of clean topsoil treated with compost is ~\$37.00 per cubic yard. Or 900,000 sq. ft x 1.5 ft. = 1,350,000 ft ³ divided by 9 cu ft/cu.yd x \$37.00 per cu yd = \$5,550,000.	\$5,550,000.00
A rough estimate for trucking this amount of soils is \$1,500,000.00 for the sake of discussion. It is assumed that an arrangement is made for the trucks to haul off the contaminated soil while bringing back clean soil thereby reducing this cost.	\$1,500,000.00
Allowing for 3% overhead and 10% profit of the soil cost and the trucking.	\$916,500.00
The ball park figures to address the chlordane contamination properly would be in the order of \$7,966,500.00	\$7,966,500.00

A HHRA that allows the raising of the EALs to “risk away” the problem would be a huge cost saving to the government and the contractor. The only cost is the exposure of carcinogens to the military families.

The HHRA – What is Missing?

The HHRA is the contractor and government’s methodology to saving money at the expense of the military families. The HHRA is based on a few obvious and unscientific assumptions. These assumptions are (1) the military families are only exposed for 6 years thereby reducing the impact of the exposure by a factor; (2) by mathematically manipulating the exposure numbers the EALs can be increased by a factor over 100; (2) the increased factors for increasing the EALs means the military families must accept a cancer risk of one in ten thousand, which is over 100,000 times what is normally acceptable; (3) the assumption for exposures are based on statements rather than scientific fact, e.g., child ingestion rate was adjusted to 100 mg/kg is “...a reasonable estimate based on recent information presented in the literature.” ; and (4) the military families have no voice so they cannot complain or be heard. The fifth question, **(5) How is this HHRA approved by the HDOH and how is it acceptable for the military families, who is accountable?**

More importantly is what the HHRA does **not** address or does not address adequately. A general list of the obvious is provided below:

- As a minimum the HHRA does not address the issues in a normal HHRA. In accordance with the definition provided by EPA the HHRA used by the contractor and the HDOH does NOT meet the standards for a normal HHRA, it is clearly slanted to save money at the cost of the exposure to the military families. EPA defines the human health risk assessment as:

*“A human health risk assessment is the process to estimate the **nature and probability of adverse health effects** in humans who may be exposed to chemicals in contaminated environmental media, now or in the future.*

To explain this better, a human health risk assessment addresses questions such as:

- *What types of health problems may be caused by environmental stressors such as chemicals and radiation?*
- *What is the chance that people will experience health problems when exposed to different levels of environmental stressors?*
- *Is there a level below which some chemicals don't pose a human health risk?*
- *What environmental stressors are people exposed to and at what levels and for how long?*
- *Are some people more likely to be susceptible to environmental stressors because of factors such as age, genetics, pre-existing health conditions, ethnic practices, gender, etc.?*
- *Are some people more likely to be exposed to environmental stressors because of factors such as where they work, where they play, what they like to eat, etc.?*

The answers to these types of questions helps decision makers, whether they are parents or public officials, understand the possible human health risks from environmental media.”¹

- The arbitrary reduction in the EAL and the risk to the military families based on a 6 year exposure does not have a scientific basis. It is strictly a manipulation of the mathematics. For example, the EAL is a number based on our acceptance of a risk of one in one million (1X10E06) over a lifetime exposure of about 30 years. This HHRA simply states that a study showing the exposure to the military families at Hickam show that the average time of residency is less than 6 years and on this basis a reduction of the risk to one in one hundred (1x10E05) is directed. There is no scientific information, data or study that shows the increased risk by a factor of ten is acceptable for a reduction in exposure time.
- The **travesty** of the assumption to increase the risk to exposure is the complete disregard to the exposure to children and infants. The above assumption of increased risk because it is only 6 years does **NOT** take into consideration that during these 6 years many of the military families are just starting out. They are pregnant and caring for their infants and children. **The EPA estimates that 50% of the cancer risk is received in the first two years of life.** The increased risk

¹ “Human Health Risk Assessment”, Introduction to EPA guides. <http://www.epa.gov/risk/health-risk.htm>

of one in one hundred thousand is unacceptable for infants and children!! In 1987 the President issued an Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks". This policy states:

Section 1. Policy.

*1-101. A growing body of scientific knowledge demonstrates **that children may suffer disproportionately from environmental health risks and safety risks.***

These risks arise because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves. Therefore, to the extent permitted by law and appropriate, and consistent with the agency's mission, each Federal agency:

- *(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.*¹²

The sixth question, **(6) The disproportionate risk to children and infants from increasing the EALs are not addressed in the HHRA, why not?**

- The HHRA makes reference throughout the documentation that the USEPA guidance is followed and acceptable to EPA. Nowhere in the document is there an approval of the EPA for the HHRA. Further it is clear that the HHRA does NOT address the exposure to children and it does not adjust the risk. The EPA guidance for assessing cancer susceptibility from early life exposure to carcinogens requires an adjustment of 10-fold for exposures before 2 years of age and a 3-fold adjustment for exposures between 2 and 15 years of age. None of these adjustments appear in the HHRA. Again without scientific data and justification arbitrarily raising the acceptable risk for early life exposure is not allowed. Keep in mind that the military families are NOT told of the significant absence of this information.
- The HDOH and EPA are tasked with the responsibility to ensure the public safety and the future of our environment is protected. The establishment of EALs creates parameters to ensure this safety to the present and the future. Arbitrarily changing the EALs in the military bases affects how this will affect the establishment of safe housing for the rest of the State. If the military housing is

² Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, Sep 2, 1987, William J. Clinton

allowed to increase the EALs to save money it is only a matter of time before the private sector will be asking for the same savings. It is noted that the contractor's documentation refers to the Hickam Communities, LLC which implies that it is a "community group" when in fact it is a private company. The seventh question, **(7) How will the HDOH and EPA ensure protection of the public and the future environment if the EALs are allowed to be changed by an unacceptable HHRA?**

- The contractor and the government have already constructed the military family projects and military families are already occupying the contaminated areas. We don't know what was done to inform them of the contamination and the consequences. We are at a point where the reality is – it is what it is. There is little hope that anything will be done for these families and that this kind of policy and politics will only continue as long as the savings are in the millions of dollars. In our wildest dreams since the damage is done and the military families must live with it we can have a list of things to do that can help these families a little:
 - The HHRA falls short in regards to the exposure of the families. The development of a monitoring protocol for the impact of the exposure for the development/growth of the children, the future illnesses or other impacts, and the monitoring of their medical conditions into adulthood is needed to prove or disprove the assumptions and rationalizations made in the HHRA. **Develop a human monitoring protocol, implement and monitor into adulthood.**
 - The HHRA makes a lot of assumptions and statements. From a scientific perspective there is nothing that prevents the contractor and the government from conducting on-going studies to prove out their assumptions and statements. **Make a commitment to conduct the scientific studies.**
 - The exposure assessment in the HHRS is inadequate, at best. The conduct of air sampling inside the homes to determine the buildup of contaminants in the residences can help to identify areas of higher exposure as they develop. **Conduct indoor air sampling of units with the higher concentrations.**
 - Conduct dust sampling or wipes inside the units to determine the dust buildup in the units. The exposure of toddlers can be higher from their inhalation and ingestion of the dust buildup. **Monitor the units to determine and identify the increase in concentration.**
 - Make available all monitoring information to all of the families. This information may be relevant to the treatment and monitoring of the growth

of the children. This information can be provided to the physicians of the children during the 6 year period and kept on file for future reference.

Provide monitoring records to the families.

- Conduct environmental monitoring of the soil to determine migration of the contaminants. ***Develop an environmental monitoring plan and documentation for monitoring migration and future reference and construction.***
- Conduct environmental monitoring of the storm drains and the outfalls to determine the discharge to the environment and the marine environment. ***Develop an environmental monitoring plan and documentation for monitoring migration and impact to the marine environment.***

Prepared By: Walter Chun, PhD, CSP, CHSP, CHST