" GUAM....
THE LAND OF THE ROSARIES ".

by

LUIS SZYFRES, M.D.,M.P.H.

ABOUT THE DEADLY CHEMICALS PRESENT IN THE FOOD, WATER, AND AIR OF GUAM

A. TOP TEN MOST TOXIC "NATURAL"CHEMICALS IN THE WORLD= NOTE: ALL OF THEM IN THE FOOD, WATER, & AIR OF GUAM

Identification and Ranking of Hazardous Substances.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Priority List of Hazardous Substances contains the names of 275 substances found at NPL sites and believed to pose the most significant potential threat to human health. This list helps form ATSDR priorities on many issues. The Superfund Amendments and Reauthorization Act of 1986 (SARA) requires ATSDR, in cooperation with EPA, to compile this priority list, which is drawn from all hazardous substances known to exist at NPL sites. The ranking of substances on the priority list is based on three criteria:

(1) frequency of occurrence at NPL sites,

(2) toxicity, and

(3) potential for human exposure.

Table 1.
Top 10 Substances on the 2001 Priority List

Rank	Name
1	Arsenic
2	Lead
3	Mercury
4	Vinyl chloride
5	Polychlorinated biphenyls
6	Benzene
7	Cadmium
8	Benzo(a)pyrene
9	Polyaromatic hydrocarbons
10	Benzo(b)fluoranthene

To ensure that the priority list is current, ATSDR periodically re-examines its information database (HazDat) of all hazardous substances known to exist at NPL sites.

In October 2001, the 2001 CERCLA Priority List of Hazardous Substances was published. Its availability was announced in the Federal Register on October 25, 2001 (66 FR 54014). The top substance on the 2001 Priority List of Hazardous Substances was arsenic, followed by lead and mercury (see Table 1).

B. THE MOST TOXIC "MANMADE" CHEMICAL IN THE WORLD= NOTE: PRESENT IN THE FOOD, WATER, & AIR OF GUAM.

Three ounces of dioxin can kill one million people.

The toxicity of TCDD is 1,000 times more lethal than potassium cyanide.

MAP OF THE AREAS CONTAMINATED WITH DEADLY TOXIC CHEMICALS IN GUAM....." ALL GUAM "

EXAMPLES OF: CONCENTRATIONS, DISPERSION & ASSOCIATED DISEASES OF THE TOXIC CHEMICAL IN GUAM

DIOXINS, TCDD, AGENT ORANGE

Federal Agency for Toxic Substances & Disease Registry (ATSDR)
TCDD: sites, dates, and concentrations/comparison values (CVs).
The most toxic manmade substances known.
Three ounces of dioxin can kill in excess of one million people.
The toxicity of TCDD is 1,000 times more lethal than potassium cyanide.

Shallow Subsurface Soil

GUAM, YIGO (SITE NO. 26)
Fire Training Area No.2-Operable Unit. Main Base: used between 1958 and 1988.
TCDD: concentrations “above” CVs ---- up to 19,000 ppm

GUAM, YIGO (SITE NO. 35)
Waste Pile No.1-Operable Unit. Main Base:
Several thousand deteriorated drums of asphaltic tar from unknown dates are at this site.
TCDD: concentrations “above” CVs ---- up to 87 ppm

GUAM, MARBO (SITE NO. 37)
War Dog Borrow Pit-Operable Unit. MARBO Annex.
Its contents and dates of operation are unknown.
TCDD: concentrations “above” CVs ---- up to 94 ppm

GUAM, NORTHWEST FIELD (SITE NO. 31)
Chemical Storage Area No. 4. Operable Unit. Northwest Field: waste oils and solvents were stored at this site.
TCDD: concentrations “above” CVs ---- up to 130 ppm

GUAM, YIGO (SITE NO. 2)
Landfills No.2/Landfill No.4/Landfill No.5 (4 & 5) are contained within 2)-Operable Units. Main Base: used from 1947 to 1975, with a small area remaining active until 1982.. Materials disposed of at this site include, petroleum, oil, lubricants, solvents, pesticides, ferrous metal, construction debris, and unexploded ordinance.
TCDD: present/concentration not-specified

GUAM, HARMON - (SITE NO. 19)
Landfill No.24-Operable Unit. Harmon: holds sanitary trash and possibly other types of debris from the 1950s.
TCDD: present/concentration not-specified

GUAM, NORTHWEST FIELD (SITE NO. 21)
Landfill No.26-Operable Unit. Northwest Field: is filled with sanitary trash and construction debris from 1966.
TCDD: present/concentration not-specified

GUAM, YIGO (SITE NO. 5)

Landfill No.7-Operable Unit. Main Base.

TCDD: concentrations “above” CVs

EXPOSURE

* 2, 4-D is an herbicide, that was a component of the Agent Orange defoliant used during the Vietnam war and it frequently is contaminated with traces of TCDD/Dioxin, which is one of the most toxic manmade substances known.

* A major route of current and past exposures is from the movement of dioxin from soil into water sediment, then into fish, and from fish consumption...into people.

* Dioxin released into the atmosphere contaminates the rivers and soil. Because dioxin compounds do not break down easily, they eventually find their way into the food chain in fish, crops, and other produce.

* Dioxin is lipophilic, which means that when it is assimilated into the human body, the heaviest deposits are to be found in body fat, or in the case of lactating women, in their milk.

HEALTH EFFECTS

NOTE: The information presented here about the effects of TCDD on human heath, was obtained from a large-scale study sponsored by the Governing Board of the National Research

Council, whose members are drawn from the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.
(10)

Background

Information

In 1991, because of continuing uncertainty about the long-term health effects on Vietnam veterans of the herbicides sprayed, Congress passed Public Law 102-4 (PL 102-4), the Agent Orange Act of 1991. That legislation directed the Secretary of Veterans Affairs to ask the National Academy of Sciences (NAS) to perform a comprehensive evaluation of scientific and medical information regarding the health effects of exposure to Agent Orange, other herbicides used in Vietnam, and the various components of those herbicides, including TCDD.

Human Studies: evaluation of evidence

1. Objective:

To fulfill its charge of assessing whether specific human health effects are associated with exposure to at least one of the herbicides or TCDD, the committee concentrated its review on epidemiologic studies.

2. Methodology:

The committee reviewed studies of cohorts of populations that resided near sites of environmental contamination, or areas used to dispose of toxic waste. More than 3,000 relevant studies were identified in those searches, and more than 550 were reviewed.

3. Evaluation of the health effects of Agent Orange:

Was studied in individuals, general population, or groups of veterans were evaluated in terms of disease or medical outcome. Pathologists, clinicians, and epidemiologists use several classification systems. For a patient to be correctly diagnosed, careful staging of the extent of disease is necessary and a biopsy of the tissue must be analyzed by microscopy, often with special immunohistochemical stains, to confirm a clinical impression.

4. Committee’s Conclusions about Health Outcomes

The present committee weighed the strengths and limitations of the epidemiological evidence reviewed in this report and in previous Agent Orange studies. Its conclusions were drawn from the new evidence in the context of the entire body of literature. It assigned each health outcome to one of four categories based on the evidence.

Table 1 defines these categories and gives criteria for assigning a health outcome to each of them. Based on the committee’s evaluation of occupational, environmental, and veteran’s studies, this table also lists the relative weight of evidence for association between particular health outcomes and exposure to the herbicides. The conclusions are related to associations between exposure to Agent Orange and outcomes in human populations, not to the likelihood that any individual’s health problem is associated with or caused by the herbicides in question.

TABLE-1

Summary of Findings of the association between Exposure of the Population to Agent Orange and Specific Diseases.

A. Sufficient evidence of an association
1. Hodgkin's disease
2. Non-Hodgkin's lymphoma
3. Soft-tissue sarcoma
4. Chronic lymphocytic leukemia (CLL)
5. Chloracne

B. Suggestive evidence of an association
6. Respiratory cancer (lung and bronchus, larynx, and trachea)
7. Prostate cancer
8. Multiple myeloma
9. Type 2 diabetes (mellitus)
10. Early-onset transient peripheral neuropathy
11. Spina bifida in offspring of exposed individuals
12. Porphyria cutanea tarda

C. More evidence needed to determine whether an association exists
13. Hepatobiliary cancer
14. Oral, nasal, and pharyngeal cancer
15. Bone and joint cancer
16. Skin cancers (melanoma, basal cell, and squamous cell)
17. Breast cancer
18. Female reproductive cancer (cervix, uterus, ovary)
19. Testicular cancer
20. Urinary bladder cancer
21. Renal cancer
22. Leukemia (other than CLL)
23. Abnormal sperm characteristics and infertility
24. Spontaneous abortion
25. Neonatal or infant death and stillbirth in offspring of exposed individuals
26. Low birth weight in offspring of exposed individuals
27. Birth defects (other than spina bifida) in offspring of exposed individuals
28. Childhood cancer (including acute myelogenous leukemia) in offspring of exposed individuals
29. Neurobehavioral disorders (cognitive and neuropsychiatric)
30. Movement disorders, including Parkinson's disease and amyotrophic lateral sclerosis (ALS)
31. Chronic peripheral nervous system disorders
32. Respiratory disorders
33. Gastrointestinal, metabolic, and digestive disorders (changes in liver enzymes, lipid abnormalities, ulcers)
34. Immune system disorders (immune suppression, autoimmunity)
35. Circulatory disorders
36. Amyloidosis
37. Endometriosis
38. Effects on thyroid homeostasis

TCDD & HEALTH EFFECTS IN THE POPULATION: WHO KNEW WHAT, & WHEN?

A. U.S. OFFICIAL STUDIES

1986: a study by the National Cancer Institute of Kansas revealed that farmers exposed to 2,4-D, an ingredient of Agent Orange, had six times more non-Hodgkin's lymphomas than farmers not exposed did.

1987: a VA study showed that Marines who served in areas of Vietnam that had been heavily sprayed with Agent Orange had a 110 percent higher rate of non-Hodgkin's lymphomas. The study also showed these Marines had a 58 percent higher rate of lung cancers.

1987: a study in the state of Washington showed veterans who had been exposed to Agent Orange had significant increases in soft tissue sarcomas and non-Hodgkin's lymphomas.

1987: a VA study showed veterans who were most likely exposed to Agent Orange had eight times more soft tissue sarcoma than other veterans did.

B. MAKERS/CHEMICAL CORPORATIONS

1965: Dow Chemical convened a meeting of executives of Monsanto, Hooker Chemical, Diamond Alkali/Diamond Shamrock Corp., and the Hercules Powder Co. The purpose of this meeting was "to discuss the toxicological problems caused by the presence of certain highly toxic impurities" in samples of 2, 4, 5-T. The primary "highly toxic impurity" was 2,3,7,8 TCDD, one of 75 dioxin compounds. Three months later, Dow Chemical sent an internal memo informing him that dioxin "is exceptionally toxic, it has a tremendous potential for producing chloracne and systemic injury."

1982: veterans filed a class action lawsuit in 1982 against the chemical companies that had made Agent Orange. Among the companies named were Dow Chemical Co. of Midland, Michigan; Monsanto Co. of St. Louis, Missouri; Diamond Shamrock Corp. of Dallas, Texas; Hercules Inc. of Wilmington, Delaware; Uniroyal Inc. of Middlebury, Connecticut; Thompson Chemical Corp. of Newark, New Jersey and the T.H. Agriculture and Nutrition Co of Kansas City, Missouri.

1984: the Agent Orange lawsuit was settled. Prodded by a U.S. District Judge, attorneys for the veterans and the chemical companies reached an agreement. At that time, 15,000 veterans and their relatives were involved in the suit, but about 250,000 subsequently filed claims. Under the terms of the settlement, the veterans received $180 million from the chemical companies..

C. US MILITARY

1967: documents uncovered in the National Archives show that the military officials aware as early as 1967 of potential long-term health risks of frequent spraying.

1969: a message went out from Joint Chiefs of Staff to Commander in Chief Pacific, stating that "A report prepared for the National Institute of Health presents evidence that 2, 4, 5-T can cause malformation of offspring and stillbirths in mice, when given in relatively high doses. This material is present in the defoliant (Agent) Orange.

1971: the U.S. Surgeon General prohibited the use of Agent Orange for home use because of

possible harmful effects on humans, all United States defoliation operations in Vietnam were brought to an end.

1988: an Air Force scientist wrote a letter to Congress, "we were aware of the potential for damage due to dioxin contamination in the herbicide. We were even aware that the `military' formulation had a higher dioxin concentration than the `civilian' version, due to the lower cost and speed of manufacture”

D. US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1979: EPA banned the use of Agent Orange in the United States when a large number of stillbirths were reported among mothers in Oregon, where the chemical had been heavily used.

1983: EPA announced a nationwide plan to clean up more than 200 dioxin-contaminated sites, including 50 plants where 2, 4, 5-T had been manufactured. The cost of the cleanup was put at $250 million and was expected to take four years.

E. US.DEPARTMENT OF HEALTH & HUMAN SERVICES (DHHS)
1983: DHHS released a report citing an association between dioxin exposure and incidence of soft tissue sarcoma.

F: US. CENTERS FOR DISEASE CONTROL & PREVENTION (CDC)
1986: the CDC released a report that showed that the residents of a mobile home park near St. Louis were suffering from liver and immune system damage because of their exposure to dioxin laced chemicals. 154 residents of Quail Run Mobile Home Park in Gray Summit, Missouri, near Times Beach southwest of St. Louis, showed depressed liver function and deficiencies in their immune systems. The dirt roads in the mobile home park had been sprayed in 1971 with dioxin-laced oil to keep down the dust.

G.US. CONGRESS
1979: a National Veterans Task Force on Agent Orange was formed and legislation was passed by Congress to commission a large-scale epidemiological study of veterans who had been exposed to the herbicide.

1984: Congress passed Public Law 98-542, designed to provide compensation for soft tissue sarcoma, and required the VA to establish standards for general Agent Orange and atomic radiation compensation.

H. WHITE HOUSE
1986: the House Energy and Commerce Committee learned that the White House's Office of Management and Budget (OMB) was trying to stop all dioxin research, claiming that enough research had been done.

GUAM:
Unknown to 165.000 civilians who live, breath, eat, drink water, and bath in a virtual omnipresent mist of the rainbow herbicides. To the present, no action has
been taken by the government.

LEAD

Federal Agency for Toxic Substances & Disease Registry (ATSDR)
Lead: sites, dates, and concentrations/comparison values (CVs).

The Most Toxic Natural Chemical in the World

A. Shallow Subsurface Soil
EPA: Uncontaminated soil-concentrations of less than 50 ppm. Soil cleanup level-400 ppm

GUAM, YIGO (SITE NO. 10).
Landfill No.14. Main base: contains concrete debris and construction debris.
Lead: concentrations “above” CVs----up to 40,000 ppm

GUAM, MARBO (SITE NO. 22)
Waste Pile No. 6 (formerly known as Landfill No. 27). MARBO Annex: contains construction debris.
Dates of operation are unknown.
Lead : concentrations “above” CVs ---- up to 6,500 ppm

GUAM, MARBO (SITE NO. 24)
Landfill No.29. MARBO Annex: is littered with household debris and garbage.
Dates of operation are unknown.
Lead: concentrations “above” CVs ---- up to 1,100 ppm

GUAM, YIGO (SITE NO. 28)
Chemical Storage Area No. 1. Main Base: in the early 1970s, the site was used for the disposal of waste petroleum, oils, lubricants, and chlorinated solvents.
About 70% of the site is filled material covered with vegetative cover.
Lead: concentrations “above” CVs ---- up to 770 ppm

GUAM, NORTHWEST FIELD (SITE NO. 31).
Chemical Storage Area No. 4. Northwest Field: waste oils and solvents were stored at this site.
Lead: concentrations “above” CVs --- up to 3,100 ppm

GUAM, YIGO (SITE NO. 27).
Hazardous Waste Storage Area No. 1. Main Base: beginning in 1950 and continuing through the 1970s, petroleum, oil, lubricants, and solvents were stored. From the late 1970s to 1983 was used to store hazardous wastes.
Lead : concentration “above” CVs----up to 8,600 ppm

GUAM: NORTHWEST FIELD - (SITE NO. 16).
Landfill No. 21. Northwest Field: operated as a sanitary trash disposal site.
Lead: concentrations “above” CVs----up to 16,000 ppm

GUAM, YIGO (SITE NO. 5).
Landfill No. 7. Main Base.
Lead: concentrations “above” CVs

GUAM, MARBO (SITE NO. 38)
MARBO Laundry Facility. MARBO Annex.
Lead: concentrations “above” CVs ---- up to 15,700 ppm

B. Groundwater from Downgradient Wells of Each Site

GUAM, YIGO (SITE NO. 1)
Landfill No. 1. Operable Unit. Main Base: opened in 1945 and continues to be used today. Materials disposed of include waste petroleum, oil, lubricants (POL), solvents, ferrous metal, construction debris, and pesticides
Lead: concentration“above” drinking water comparison values (CVs)

GUAM, MARBO (SITE NO. 24)
Landfill No. 29 (LF-29). OU: MARBO Annex. LF-29 is littered with household debris and garbage.
Dates of operation are unknown.
Lead: present/concentration not-specified

EXPOSURE
A common source of lead contamination are landfills that contain waste of lead-containing products (i.e. ammunition in military bases, or waste and debris of certain activities)

A. Contamination of the Environment

1. Once lead falls onto soil, it sticks strongly to soil particles and remains in the upper layer of soil, and part of it may enter rivers, lakes, and streams when soil particles are moved by rainwater.

2. Sources of lead in dust, soil, and groundwater include lead that falls to the ground from the air. Once lead that gets into the atmosphere, may travel long distances if the lead particles are very small

3. Lead may remain stuck to soil particles or sediment in water for many years.

4. The levels of lead may build up in plants and animals from areas where air, water, or soil are contaminated with lead.

5. If animals eat contaminated plants or animals, most of the lead that they eat will pass through their bodies.

B.Exposure of the population to lead
a) People living near hazardous waste sites are exposed to lead and chemicals that contain lead by breathing air, drinking water, eating foods, or swallowing dust or
dirt that contain lead.
b) People may be exposed to lead by eating food, drinking water, or breathing in or swallowing airborne dust and dirt.
c) Leafy fresh vegetables may have lead-containing dust on them. Children may be exposed to lead by hand-to-mouth contact after exposure to lead-containing soil or dust.
d) Some of the lead that enters the human body comes from breathing in dust or chemicals that contain lead. Once this lead gets into the lungs, it goes quickly to other parts of the body in the blood.
e) Lead can also enter the body by swallowing food or drinking liquids that contain it.
f) Dust and soil that contain lead may get on the skin.

g) Shortly after lead gets into the body, it travels in the blood to the "soft tissues" and organs (such as the liver, kidneys, lungs, brain, spleen, muscles, and heart).
h) After several weeks, most of the lead moves into the bones and teeth. Some of the lead can stay in the bones for decades; however, some lead can leave the bones and reenter the blood and organs under certain circumstances (e.g., during pregnancy and periods of breast-feeding, after a bone is broken, and during advancing age).

HEALTH EFFECTS

An enormous amount of information is available on the health effects of lead on human health. In fact, the toxic effects of lead have been known for centuries, but the discovery in the past few decades that levels of exposure resulting in relatively low levels of lead in blood associated with adverse effects in the developing organism is a matter of great concern.

The most sensitive targets for lead toxicity are the developing nervous system, the hematological and cardiovascular systems, and the kidney. However, due to the multi-modes of action of lead in biological systems may affect any organ in the body, including:

1. Encephalitis, Parkinson's Disease, Multiple Sclerosis, Myelopathy (spinal cord pathology), Epilepsy, Peripheral Neuropathies, Seizures.

2.Memory Loss (long term), Attention Deficit Disorder, Autism, Schizophrenia, Concentration Loss, Emotional Instability, Hallucinations, Depression, Dyslexia, Behavioral Disorders, Hyperactivity, Learning Disability.

3.Arthritis (rheumatoid and osteo), Gout, Muscular Dystrophy, Joint Pain, Cartilage Destruction.

4.Nephritis, Renal Dysfunction

5.Cardiovascular Disease, Anemia, Hypertension.

6.Adrenal Insufficiency, Hypothyroidism.

7.Stillbirths, Sterility, Infertility, Sudden Infant Death Syndrome.

8.Liver Dysfunction.

9.Deafness, Blindness.

10.Immune Suppression.

DOUBLE STANDARDS: US-CONTINENTAL Vs US-GUAM

A. US, STATE OF MISSOURI, CITY OF TIMES BEACH

1. SITUATION:

§ Times Beach, Missouri was a small town of 2,240 residents.
§ Unknown to the residents of Times Beach, for several years in the mid 1970s, dioxin laced oil had been sprayed on the town's roads to keep down the dust.
§ Times Beach, -had- levels of dioxin contamination as high as 33 parts per million ----- 33 times more toxic than the U.S Environmental Protection Agency (EPA) level of acceptance

2. ACTION TAKEN:
- The government took immediate action, and decided that as the contamination was so bad, the only way to save the town's residents from further damage from dioxin was to buy them out and move them out.
- In early 1983, the U.S. government spent $33 million buying the 801 homes and businesses in Times Beach and relocating its 2,200 residents. The entire town was fenced in and guards were brought in to keep out the curious. "Caution, Hazardous Waste Site, Dioxin Contamination," read the signs leading into Times Beach.

B. US, GUAM

1.SITUATION:
§ Guam is a US territory with a population of 154,805 (2000 U.S. Census).
§ Unknown to the residents of Guam, their environment has been contaminated with toxic chemicals for more that four decades.
§ Guam, -has- levels of dioxin contamination as high as 19,000 parts per million --- 19, 000 times more toxic than EPA's levels of acceptance

2.ACTION TAKEN:
- After more than 50 years, the government took no action.

GUAM: DISEASES ASSOCIATED WITH THE TOXIC CHEMICALS
Unknown to the residents of Guam, their environment has been contaminated with toxic chemicals for decades. The air they breathe, the water they drink, and the food they eat, may be contaminated with toxic chemicals that can produce any of the diseases listed bellow.

Health Effects: the toxic chemicals enter the person's bloodstream and may affect any organ or system in the body, some examples of the most common diseases produced by the chemicals include:

Cancer, Encephalitis, Parkinson's Disease, Multiple Sclerosis, Renal Dysfunction, Cardiovascular Disease, Liver Dysfunction, Deafness, Blindness, Myelopathy (spinal cord pathology), Epilepsy, PeripheralNeuropathies, Seizures, Memory Loss (long term), Attention Deficit Disorder, Autism, Schizophrenia, Concentration Loss, Emotional Instability, Hallucinations, Depression, Dyslexia, Behavioral Disorders Hyperactivity, Learning Disability, Arthritis (rheumatoid and osteo), Gout, Muscular Dystrophy, Joint Pain, Cartilage Destruction, Nephritis, Anemia, Hypertension, Adrenal Insufficiency, Hypothyroidism, Stillbirths, Sterility, Infertility, Sudden Infant Death Syndrome, Damage to the central nervous system, Loss of memory, Listlessness, Severe trembling, Alzheimer's disease, Amyotrophic Lateral Sclerosis, Postencephalitic Parkinsonism, Progressive Bulbar Paralysis, Multiple Sclerosis, Progressive Lenticular Degeneration (Wilson's disease), Immune Suppression, Dementia.