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DEPARTMENT OF THE NAVY
TWO ASSISTANT SECRETARY OF THE NAVY
(INSTALLATIONS AND ENVIRONMENT)
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

June 20, 2002

The Honorable Duncan Hunter
House of Representatives
Washington, DC 20515-0552

Dear Congressman Hunter:

Thank you for your letter of March 14, 2002, to the Chief of Legislative Affairs, which invited Navy to review three documents addressing alleged adverse health impacts to the residents of Vieques from naval training activities. I am responding for Rear Admiral Roughead. These documents include:

1. A letter from Ernest Chiodo, M.D., J.D., dated 25 February 2002 to the law firm of John Arthur Eaves;
2. An undated report entitled Ecological assessment of heavy metals in VIEQUES, Puerto Rico by Arturo Massol-Deya, Ph.D., (59 pages) and attached section of a report summarizing goat hair sampling and analysis, with a sectional title of Herbivorous: additional evidence of heavy metal mobilization through the food web; and
3. A report and/or section of a report entitled Heavy metal exposure and disease in the proximity of a military base, by Carmen Ortiz Roque, M.D. (undated; 12 pages, including text, tables and figures).

Those same documents were provided to the Navy on February 28, 2002 by the John Arthur Eaves law firm, which represents approximately 3,000 persons who have filed claims against the Navy seeking over 3.4 billion dollars for alleged personal injuries. When the Eaves firm provided the documents to the Navy, it agreed to have the documents reviewed by Navy medical, public health, and environmental experts.

Enclosed is a summary of a preliminary review of the three documents by Navy experts. Our reviewers note that the assertions contained in the documents are not founded on reliable evidence, and the reported methodologies fail to meet the rigors of credible scientific research. In particular, there is no credible evidence to support the central theses in the documents: that naval training activities caused an

accumulation of heavy metals in the soil in Vieques; that the metals entered the food chain resulting in an exposure to the residents; and that such exposure harmed their health.

The Navy takes most seriously the health of the people of Vieques, and we remain committed to carefully and thoroughly examining all responsible allegations that our training activities have adversely affected the public health. We continue to support the public health assessments being conducted by the Agency for Toxic Substances and Disease Registry, and we note that those assessments have concluded, to date, that naval training activities at Vieques do not pose a risk to the public health.

If you require further assistance you may contact Mr. Paul Yaroschak, Director, Environmental Compliance and Restoration Policy, at (703) 588-6695.

Sincerely.

A handwritten signature in black ink, appearing to read "H T Johnson". The signature is written in a cursive style with some capitalization.

H. T. Johnson

Enclosure

Enclosure: Navy Responses to Issues Raised in a Letter from Dr. Ernest Chiodo Regarding the Ecological Assessment of Heavy Metals in Vieques

Documents Reviewed:

The documents provided for review included the following: (1) a letter/memorandum from Ernest Chiodo, M.D., J.D., dated 25 February 2002 to the law firm of John Arthur Eaves; (2) an undated report entitled *Ecological assessment of heavy metals in VIEQUES, Puerto Rico* by Arturo Massol-Deya, Ph.D., University of Puerto Rico Department of Biology (59 pages) and attached section of a report summarizing goat hair sampling and analysis with a sectional title of *Herbivorous: additional evidence of heavy metal mobilization through the food web* (undated; the author/signatory identified at the end of the section is Arturo Massol, Ph.D.) and (3) a report and/or section of a report entitled *Heavy metal exposure and disease in the proximity of a military base*, by Carmen Ortiz Iloque, M.D. (undated; 12 pages. including text, tables and figures).

Overview

In general, Dr. Chiodo's letter asserts that heavy metal contamination has occurred in the Navy training Live Impact Area (LIA) at Vieques, and that this contamination has entered the human food chain at Vieques, representing a health hazard to the civilian population on the island. Dr. Chiodo's claims are based on the unpublished reports listed above and attached to his letter, supplemented by his opinion. In general, Dr. Chiodo's assertions regarding human health risk from Navy activities on Vieques are not based on the results of credibly-documented investigations, and do not appear to be consistent with accepted toxicological assessment methodology. In addition, Dr. Chiodo fails to address available studies conducted by the U.S. Public Health Service Agency for Toxic Substances and Disease Registry (ATSDR) that reach different conclusions and adhere more rigorously to accepted scientific public health assessment methods.

New Response to Issues Raised

1. The paper titled "Ecological Assessment of Heavy Metals in Vieques, Puerto Rico", authored by Arturo Massol-Deya, and a section of a report titled "Herbivorous: additional evidence of heavy metal mobilization through the food web" by the same author, evaluate heavy metal contamination at the LIA and the potential for the metals originating from the LIA to enter the human food chain. In referring to these documents, Dr. Chiodo states that the "methodology and assertions are credible and consistent with the recognized science in the field." Key issues raised by Dr. Chiodo include:

- "there is serious heavy metal contamination of the Live Impact Area (LIA) of the Atlantic Fleet Weapons Training Facility (AFWTF) on Vieques Island."

- "there has been dispersal of contaminated material from the LIA to areas inhabited by civilians on Vieques Island."
- "the contamination has entered the food chain of Vieques Island."
- "biomagnification of heavy metals has occurred leading to dangerous concentrations of toxins in human foodstuffs grown and collected on the Island."

Response to these assertions follows:

No direct evidence or contamination is presented: The study conducts an indirect evaluation of potential contamination originating from the LIA by analyzing plant and animal tissues from various locations on Vieques and Puerto Rico, and then uses this indirect methodology to assert that elevated levels of metals are caused by Navy activities. However, no analysis of metals in soils from the LIA, populated areas of Vieques, or control areas is provided. Therefore, the study provides no information to correlate the levels found in tissues with any conditions in the media (e.g., soil) at the LIA. The study lacks the evidence necessary to support the assertion that serious heavy metal contamination is occurring, and that this contamination is dispersing to civilian areas.

Reference/control site selection poorly documented: The study compares conditions at Vieques to those at a reference site. In such comparative analyses, the reference site must be carefully selected to maximize similarity (e.g., geologic, climatic, vegetative type) between the sample site and the reference location. However, in this study, the exact sampling locations are not indicated, and no criteria for reference site selection are provided. Reference conditions appear dissimilar and therefore inappropriate for comparison to Vieques. For example, the Guanica site is characterized by a rocky limestone substrate rather than the more highly mineralized rock found at Vieques. Based on the differences between these parent geologic materials, Vieques soils naturally are higher for a number of metals, as described in the public comment draft ATSDR public health assessment (PHA) for the soil exposure pathway. ATSDR indicates that the soils of Vieques are strongly influenced by the constituent chemicals of the parent geologic materials. Several other studies evaluated the concentrations of metals in soils from Vieques, and concluded that the levels of metals found in soils in populated areas of Vieques showed no elevated levels relative to naturally-occurring background levels. In addition, modeling studies conducted by IT Corporation indicate that, even when live ordnance was used in the past, wind-borne dust would not have reached populated areas of the island at levels of concern.

Quality control information validating the reported laboratory data is not provided: A thorough analysis and response to the study is not possible, as sample collection, sample preparation, sample handling, analytical techniques, and other standard quality assurance/quality control procedures are not indicated. Statistical accuracy cannot be evaluated, as the actual numbers of samples analyzed for each type of flora/fauna are not reported. The quality of the reported data is unknown.

Risk assessment methodologies are unclear: The report confuses ecological risk assessment and **human** health risk assessment, often attempting to develop human consumption risk information using analytical data for **flora/fauna** or **flora/fauna** parts that are not consumed by humans. **The** report presents broad, unsupported statements about potential adverse human health effects while failing to **perform** either a **human** health risk assessment or an ecological risk assessment per accepted **USEPA** methodology and format.

2. The key issue raised in the paper "Heavy metal exposure and disease in the proximity of a military **base**", authored by Carmen Ortiz Roque, is the statement by Dr. Chiodo that "Dr. Ortiz Roque [sic] presents epidemiological **evidence** that there has been human exposure to hazardous materials including heavy metals on Vieques Island attributable to military activity on the LIA." Dr. Chiodo supports the **conclusions** of this paper, stating the "methodology and assertions are credible and consistent with the **recognized** science in the field."

The paper, as written, does not provide enough detail to allow a critical evaluation **of the** methods, **results**, or conclusions. The study by Dr. Ortiz Roque was designed to measure the levels of several metals in human hair among the population of Vieques. In addition, reference is made to epidemiological data on infant mortality and cancer rates among **the** population of Vieques. There appear to be a number of critical flaws in this study:

- subjects involved in the hair study were not randomly **selected** and no control population was evaluated,
- a graphic of mortality rates is provided, but the data used to develop **the** graphic and required to support the report's conclusions are not provided,
- alternative causal factors for the supposed increased mortality rates are not explored (**e.g.**, socio-economic status, access to medical care, and quality of medical facilities on Vieques),
- **recent** studies have concluded that hair analysis is generally **unreliable** for assessing environmental exposures and it should not be used for biological monitoring,
- no causal association was documented between mortality data and exposure to metals on Vieques.

Conclusions of the paper are that an increased mortality exists among the people of Vieques, and that this increase is due to contamination from military activities. These conclusions are not supported by this study. Dr. Ortiz Roque asserts that residents of Vieques exhibit excessive exposure to several metals. However, no data are provided on comparable control populations to support this assertion. Dr. Ortiz asserts that there is an increased mortality rate among residents of Vieques, however only a graphic depicting mortality rates is provided. No information linking this supposed increased mortality to Navy activities is provided. The conclusions presented by Dr. Ortiz Roque are scientifically unsupported.

3. Dr. Chiodo's letter **makes** several additional claims based on the opinion of Dr. Chiodo himself. These include the assertion that citizens living for extended periods of **time** on the **Island** and **consuming** endogenous food products are at serious risk of disease, and that prudent public health practice requires immediate intervention. Specific issues raised by Dr. Chiodo are:

- "surveys by the United **States Geological Service [sic]** strongly indicate that the source of heavy metal contamination on Vieques is the military activity on the island."
- "the **inhabitants of Vieques** suffer a unique risk that is unlikely to exist around other United States installations. Their risk is unique since **they** are confined to an island."
- The inhabitants of Vieques "are forced by their isolation and poverty to consume endogenously grown food products. These factors combined with the magnitude and dispersal of contamination from heavy bombardment creates a risk to human life unlikely to exist around other United States military installations."
- "citizens living for extended periods of time on the island and consuming endogenous food products are at serious risk of disease."

Dr. Chiodo's assertions **are** made without any supporting references, other than **the** unpublished reports critiqued above. **Previous** reviews of US Geological Survey studies for **Puerto Rico**, in conjunction with soil studies conducted by the Navy and reviews conducted by ATSDR, suggest that metals levels in soil in the populated portions of Vieques are within expected naturally occurring background levels. Dr. Chiodo's claims relating risks to the general Vieques population to Navy activities are unsupported.

ATSDR Studies

ATSDR is conducting a series of focused public health assessments to investigate whether there are public health concerns **related** to the Navy's training activities at Vieques. ATSDR has completed a "Drinking Water Supply and Groundwater Pathway Evaluation", and a public comment draft of a "Soil Exposure Pathway Evaluation." No apparent public **health** hazards associated with Navy training activities at Vieques were characterized for either of these pathways. ATSDR is also conducting an Air Pathway Evaluation and a Fish and Shellfish Evaluation, and we understand that public comment drafts of those evaluations will be completed in the near-term. The ATSDR evaluations, to date, have rigorously followed accepted scientific methodologies for the assessment of public health.

4. Issues and responses provided above summarize the serious concerns the Navy has with the assertions made by Dr. Chiodo and with the unpublished **reports** he uses to support those assertions.