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**Mission**

To encourage informed and active participation in government, increase understanding of major public policy issues, and influence public policy through education and advocacy.

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**Comments**

RE: Human Health Risk Assessment  
February 2019  
Open Burn/Open Detonation Units  
Range C-52 North and Range C-62  
Eglin Air Force Base, Florida  
Operational Permit No. 006176-HO-007

Merlin D. Russell Jr.  
Professional Geologist III  
Hazardous Waste Permitting and Programs  
Bob Martinez Center 2600 Blair Stone Road  
Tallahassee, FL 32399-2400

Dear Mr. Russell:

Once again, your review of an Eglin Human Health Risk Assessment points out very serious deficiencies in the monitoring report. We incorporate by reference our May 16, 2018, comments.

We especially appreciate your emphasis on two points: that groundwater cleanup target levels (GCTLs) are intended as not-to-exceed numbers based on the individual results from the individual wells, and that the risk to potential receptors (onsite workers and residents) for Range C-62 exceeds the State of Florida's allowable excess cancer risk of 10-6.

We urge you to require that the Eglin permit be immediately updated to specify the current GCTLs.

We agree that manipulation of data to achieve a result below the GCTLs for alternative concentration limits fails to measure human health risk. This is significant due to the great pressure on Florida's potable water supplies from rapid development and saltwater intrusion. It is imperative that we acknowledge the likelihood that Eglin groundwater and surface water will eventually be proposed for drinking water use. No viable supply of fresh water can be sacrificed to needless pollution.

We offer these additional specific comments on certain assertions in the HHRA:

## “1.0 HAZARD IDENTIFICATION

This section identifies the COPCs in sampled environmental media based on a comparison of maximum detected concentrations to human health risk-based screening levels. The selected screening levels are protective of adverse health effects; therefore, chemicals present at concentrations below the corresponding screening levels are not anticipated to pose human health risks.”

Although this may be the standard, we want to point out that it is clearly not actually protective of human health, since:

- Chemicals at lower levels have been found to have adverse health effects. For example, atrazine can exert endocrine disruption effects at extremely low amounts.
- The chemicals are not found individually, but in groups, and there are few studies that demonstrate the “safe levels” of exposure to multiple toxicants, which could have additive or synergistic effects.

## “2.0 EXPOSURE ASSESSMENT

The objective of the exposure assessment is to estimate the type and magnitude of human exposure to COPCs in groundwater within Range C-52N and Range C-62, as well as in offsite surface water bodies. This is accomplished by establishing assumptions about the potential for human exposure (e.g., exposed populations, exposure frequency) to groundwater within the two areas. For COPCs, representative EPCs are calculated and used to model potential human exposure in the form of daily chemical intakes and dermally absorbed doses (DAD). **Since RDX is not volatile, inhalation is not a relevant route of exposure.**”(Emphasis ours)

A contaminant need not be volatile to be inhaled, as it would be when showering in contaminated water allows for inhalation as well as enhanced absorption.

Other scenarios for human exposure to RDX could involve dermal contact at the point of groundwater discharge into creeks and estuaries, consumption of produce irrigated with contaminated water, and consumption of seafood in which RDX has been allowed to bioaccumulate.

It appears that no effort has been made to monitor the degradation products of RDX, some of which are highly toxic, such as nitrosamine derivatives and hydrazines. This deficiency must be corrected.

### ”2.1.1 Groundwater

The OB/OD units are located on both Range C-52N and C-62 (i.e., OD on C-52N and OB/OD on C-62), and site conditions on both ranges enable site-related munitions

constituents to enter the groundwater system. However, groundwater in the surficial aquifer is currently not used as a potable water supply at Eglin AFB. Therefore, potentially complete exposure pathways at the site include hypothetical future onsite worker exposure to groundwater via future potable wells and hypothetical future onsite resident exposure to groundwater via future potable wells. Exposure to RDX in tap water includes ingestion and dermal contact.”

Why should it be assumed that there is no migration into sources of potable water that Eglin may need in the future and into sources used by surrounding communities?

We note that no additional wells have been put in place to address your 2018 comments regarding the adequacy of monitoring near active testing and training locations.

Another concern you mention in your 2019 review is the need for additional monitoring wells to define the south/southwestern edge of the RDX plume under Range C-62, where concentrations have doubled between the 2017 and 2018 sampling events in the downgradient wells closest to Blount Mill Creek.

It is critical that monitoring wells be sited to intercept contaminants between OB/OD locations and potable water wells for current and future base or civilian use.

### “3.1 Sources of Toxicity Values

The USEPA and other regulatory agencies have performed toxicity assessments for numerous chemicals, and their guidance was used in this HHRA. Toxicity values include reference doses (RfDs) and reference concentrations for the evaluation of non-cancer health effects from chronic and sub-chronic exposure to chemicals, and cancer slope factors and inhalation unit risks for evaluating incremental cancer risk from exposure to chemicals prorated over a lifetime (i.e., excess lifetime cancer risks).”

#### “3.1.1 Adverse, Non-cancer Health Effects

The NCP (USEPA, 1990) indicates that acceptable exposure levels for chemicals with non-cancer health effects should represent concentration levels to which the human population, including sensitive subpopulations (e.g., the elderly, young children), may be exposed without adverse health effects during a lifetime or part of a lifetime, incorporating an adequate margin of safety.”

“Generally, order-of-magnitude uncertainty factors reflect the various types of toxicological data (e.g., a laboratory animal study extrapolated to the human condition) used to estimate the RfDs. Modifying factors, which can range from greater than zero to 10, reflect qualitative professional judgment regarding scientific uncertainties (e.g., the completeness of the overall database) not covered by the uncertainty factors. Application of the uncertainty and modifying factors is intended to result in RfDs that are protective of human health.”

Toxicity testing is dependent on the methodology used – is there multigenerational testing? How long is exposure? What organisms are used for testing? (As a wise man once said, a lab rat isn't a good model for a rat, let alone a human).

Fetuses in utero? Effects and sensitivity could be dependent on when a process is occurring, which could be a few days or weeks (blastocyst formation, neural tube closure, etc.).

#### “5.1 Environmental Sampling and Analysis

This HHRA is based on groundwater data for a limited number of monitoring wells at both Range C-52N and Range C-62. Data for soil at these sites were not reviewed for this HHRA. Based on the understanding that the areas around these sites are used for active testing missions, it may be that these activities also contribute as sources of explosives like RDX.”

Contributions from past and current testing missions is likely. We would expect soils in the vicinities of both ranges to be a source of contamination and that RDX from active testing is adding to the risk.

P13 “However, as the OB/OD units are within training ranges, the areas are closed to hunting, fishing and recreation, and all public access. Although base personnel may access these areas, the recreation user scenario with child exposure is highly unlikely. **Therefore, this HHRA likely overestimates the potential for risk overall.**” (*Emphasis ours*)

This is an unsupported claim. Given the deficiencies cited in your review and audit, as well as the points outlined above, it is much more likely that the 2019 HHRA understates the potential for risk to humans.

In our May 2018 comments to you, we asked that monitoring be carried out quarterly, rather than annually, and this appears even more urgent as we see exceedances increasing so rapidly. Most recently, Eglin has submitted monitoring reports July 2017 and February 2019, obviously an unacceptable gap of 19 months.

We repeat that monitoring of Eglin's air emissions is essential for measuring the risk to human health. OB/OD contamination travels through air, as well as soil, to reach groundwater in these high concentrations; the air exposure pathway cannot be discounted.

Once again, we urge you to require that Eglin immediately begin phasing out OB/OD. Safer alternative technology is available and its viability has been endorsed by the Department of Defense Explosives Safety Board and the National Academy of Sciences.

Clearly RCRA never contemplated a delay of nearly 40 years before the DoD's munitions disposal procedures would comply with the federal hazardous waste law.

We will be happy to discuss this with you if you feel it would be useful.

Sincerely,

*Ellen Roston*

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President  
League of Women Voters of the Pensacola Bay Area

*Darlo Kiely*

Darlo Kiely  
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