

17<sup>th</sup> December 2008

Mr George Piant,  
CEO  
Administration of Norfolk Island  
Delivered by email attachment

Toxikos Reference: TL161208-JF

**RE: An opinion on health risks associated with dioxin soil and sludge samples collected from various location on Norfolk Island**

Dear Mr Plant,

You have requested Toxikos to provide an opinion on potential health risks based on a set of dioxin soil and sludge analytical results provided on the 16<sup>th</sup> December 2008.

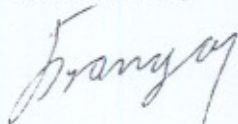
At three locations around the south west corner of Norfolk Island (ie near the burning grounds at Headstone Reserve) and one location on the east side of the Island (control site), composite soil samples were collected at and below the surface (top 10 cm of soil). The dioxin soil concentrations in the South West (5.2 to 8.6 ng TEQ/kg) were marginally lower than those found on the west side of the Island (11.7 ng/kg).

Toxikos is of the opinion that dioxins detected in soil present a **negligible health risk** to people because the dioxin concentrations are within background concentrations for Australian soils and less than soil guideline values intended to be protective of human health.

Samples of sludge (i.e. water + sediment) were collected from the bottom of two rainwater tanks south east SE of burning pit (samples designated "[REDACTED]") and the bottom of a dam and a rainwater tank from properties NE of the burning pit (samples designated "DAM", "[REDACTED]"). The sludge results are reported in units of pg TEQ/L but include measurement of dioxins in both sediment and water. The dioxin in dam/water tank sludge samples ranged between 0.56 and 8.3 ng TEQ/L

These results do not indicate any immediate concerns for public health. It is likely that the dioxins measured are present in the sediment of the tanks. However additional testing is required to separate the sample (sediment, pore water) and test the sediment and water collected (separately) in order to confirm the negligible risk to public health.

Yours sincerely



John Frangos, M.App.Sc. (Toxicology)

Table 1. Summary of sample locations, samples and analytical results

Environmental media & Sample name	Description of sample location <sup>a</sup>	Analytical result ng/kg or ng/L <sup>b</sup>
Soil - [REDACTED]	Rural property used for cattle grazing.	5.2 (5.18)
Soil - [REDACTED]	Residential yard.	8.6 (8.60)
Soil - [REDACTED]	Residential yard.	6.1 (6.06)
2 Chimney samples	Rural property used for cattle grazing.	11.7 (11.72)
Sludge - Dam	Located in a creek,	8.3 ng/L sludge
Sludge - [REDACTED] Rain water tank	Residential rainwater tank, sludge at bottom of tank. Water used for domestic water supply.	3.9 ng/L sludge
Sludge - [REDACTED] Rain water tank	Residential rainwater tank, sludge at bottom of tank. Water used for domestic water supply	0.56 ng/L sludge
Sludge - [REDACTED]	Residential rainwater tank, sludge at bottom of tank. Water used for domestic water supply	3.8 ng/L sludge

<sup>a</sup> Personal communication NIA (2008).

<sup>b</sup> Results are from ALS (2008a) units of pg/g are equivalent to ng/kg. The WHO-TEQ at 0.5 LOR was used for the present assessment (refer section 1). Analytical results were rounded to one significant figure in this report.