

SA Health assessment

Port Augusta (Flinders) Ash Dam sampling results, December 2016

1. High Volume Sampler (TSP) 50-70 microns and below

Qualitative analysis for metals, metalloids (sampling occurred over 2 1/2 weeks under certain wind conditions related to the wind directions from the Alinta Ash Dam. The sampling discontinued when the wind came from a different direction. The results represent the difference in weight between the blank and the sampling filter.

As the analytic composition is specific for the Alinta Ash dam site, it is not possible to compare to other sites. Considering that the concentrations of potential toxic metals are very low, there seems to be no increased adverse health potential from the Alinta dam site.

2. Qualitative XRD Results (mineral abundance)

The results indicate that the wave length phases are consistent with salt (NaCl) and Silicate (SiO₂); both, clearly abundant anywhere near coastal areas.

3. Semi-quantitative XRD and Sem (scanning electron microscopy) analysis of one dust sample

Bulk analysis and spot analysis was conducted.

Bulk analysis did not indicate any toxic substances, while spot analysis specified some weight percentages associated with S, Fe, Ba and Pb. The images also give some indication of the size of the particles. The spots are probably PM₁₀ or smaller, while the fibres are mostly larger than 20 micrometres.

Conclusion

The results indicate that the dust air sample contains minimal toxic metals and substances. Spot analysis showed that some small particles were collected which were consistent with the coal combustion process (S, Fe, Ba, Pb). While there is a potential for these elements to contribute to inflammation pathways in the respiratory system, the science of contribution of specific 'toxic' substances to adverse health effects via particle in the air exposure is less than certain.

The issue of adverse health effects from fine particles still remains in spite of the relatively low toxic potential of the dust emanating from the site - that is particles inherently have a toxic potential irrespective of their elemental make-up. The best protection is prevention of fugitive dust as the dam dries out.