

## Testimony to EPA Expert Panel on WTC Contamination

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Discussions conducted by the EPA Expert Panel on WTC Contamination “have led to the concept that a WTC signature exists in dust and that sampling could focus on determining the presence of that signature, as well as the levels of contaminants of potential concern.” Although each of the COPC is identified with a specific health risk benchmark value, there are no benchmark values for the **total mixture** of COPCs found in each dust sample. Data is not available for the possible **toxic synergy** of these mixtures. Furthermore, there may be “new” contaminants, not previously listed as suspect agents.

I propose that an appropriate bio-monitoring assay be employed in order to assess the toxicity and potential long-term health effects of the complete mixture of contaminants in WTC dust in indoor environments. Specifically, I propose the use of the *Tetramitus* Assay. *Tetramitus* is a single cell flagellate which ingests whole particles. Growth inhibition data are generated from flagellate cultures which are exposed to either soluble toxicants or toxic whole particles. Attached to this memorandum is my recent report to the EPA Health Effects Laboratory<sup>1</sup>, which documents toxicity tests of flagellates exposed to NIST Standard Reference Materials as well as reference toxicants used in the EPA WTC Mouse Exposure Studies<sup>2</sup>. The dose response for exposure to these toxic particles is illustrated in Figure 1. The **linearity** of the dose-response regression lines is an important feature of this assay. Because of the high  $r^2$  values (correlation coefficients), **single dose determinations** can be employed for screening a large number of dust samples.

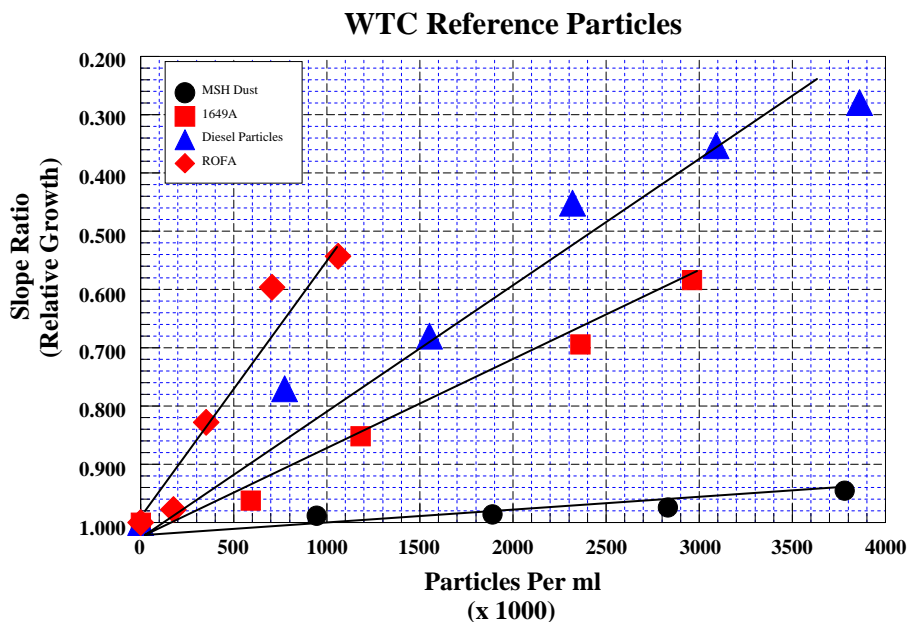


Figure 1. Dose Response of *Tetramitus* flagellates exposed to WTC Reference Samples.

Evidence is presented, in the *Tetramitus* Report to the EPA, which supports the hypothesis that this growth inhibition is associated with DNA damage. Lewitas, et.al,<sup>3</sup> have published values for the mutagenicity of diesel particles, 1649a (Urban Air), and coal tar using the Ames *Salmonella* test. *Tetramitus* also exhibits dose-dependent toxicity to coal tar<sup>4,5</sup>. DNA damage is the postulated first step in the conversion of normal cells to cancer cells. DNA damage also impairs the immune system; thus, compromised individuals are at greater risk for a whole spectrum of infectious diseases.

The inclusion of the *Tetramitus* Assay as one test in a battery of tests would now address the issue of **mixtures**. After demonstration of *Tetramitus* test concordance with COPC test results, the *Tetramitus* Assay could be employed as a cost-effective pre-screening tool to expand the frequency of testing and to extend the geographic limits of the building survey.

#### References:

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