



# FACT SHEET



## **DRAFT**

### **Work Plan for Long-Term Indoor Air Quality Monitoring and Phase 2 Human Health Risk Assessment; Building N-15, N-17, and N-243 NASA Ames Research Center Moffett Field, California**

At the request of NASA Ames Research Center, MACTEC Engineering and Consulting (MACTEC E & C) has prepared a Draft Work Plan for Long-Term Indoor Air Quality Monitoring of Buildings N-15, N-17, and N-243 at NASA Ames Research Center to describe proposed methods for the sampling of the indoor air in the subject buildings for Volatile Organic Compounds (VOCs). These VOCs are contaminants associated with the groundwater in the shallow A aquifer underlying the NASA Ames Campus and the NASA Research Park (NRP) site. The NRP is comprised of 213 acres that is being planned for redevelopment as a collaborative research and educational campus, with associated facilities. Building N-243 is located on the NASA Ames Campus, and buildings N-15 and N-17 are historic buildings located in the NRP. These buildings are all currently occupied and it is expected that this occupancy will continue for the foreseeable future. Because these buildings are used primarily as office space, the only receptor considered in this study is an indoor worker. Only the inhalation exposure pathway is considered complete.

Samples will be collected from selected indoor and outdoor locations using evacuated 6 L Summa canisters. The canisters will be returned to the analytical laboratory for analysis of VOCs by Method TO-15A (*USEPA, 1999*) upon completion of a sampling event.

Both 24- and 8-hour samples will be collected over 6 months to ensure that both seasonal and diurnal variations in sample concentrations are captured. These would include variations in temperature and depth to groundwater.

VOCs in groundwater can migrate, via soil air space, into buildings overlying a contaminated groundwater plume. Methods exist for indirectly evaluating the extent to which the VOCs enter indoor air space (modeling based upon ground water or soil gas concentrations), however these methods suffer from uncertainties based upon limited availability of site-specific data and the overall predictive capabilities of the models. Measurement of air concentrations most directly assesses the extent to which any of the VOCs are present in the indoor airspace. While measurement of air concentration eliminates uncertainties related to modeling, other factors must be accounted for if these results are to accurately reflect exposure.

The measured concentration of any chemical in air can be due to a multitude of sources, such as background air or indoor sources. In order to associate the measured indoor air concentrations with chemicals in the groundwater with a high degree of certainty, data on background chemical air concentrations, groundwater concentrations in the vicinity of the buildings in question, and surveys of chemicals and products used indoors will be collected and evaluated.

The Phase 2 Human Health Risk Assessment will determine the risk to indoor workers, based on measured air concentrations of VOCs.

## **Previous Investigations and Human Health Risk Assessment**

Previous short-term indoor air studies have detected numerous VOCs in buildings N-15 (*HESE, 2001*) and N-243 (*HLA, 2000*). The indoor air samples for these buildings were all single 24 hour integrated samples. No indoor air data is available for building N-17. Three rounds of soil surface flux samples were collected in the NRP. In general, the VOCs detected in the flux samples were similar to those detected in the indoor air. Groundwater monitoring has been conducted on the NASA Ames Campus and the NRP for approximately 15 years. In general, some of the chemicals detected in the indoor air and flux samples were also detected in the groundwater. However, there are some chemicals (such as vinyl chloride) that have been detected in the groundwater, but some have not been found above detection limits in either the flux or indoor air samples.

On September 16, 2002, NASA released the Draft Revised Human Health Risk Assessment (HHRA) for the NRP, and on December 16, 2002, NASA released the Draft Revised Human Health Risk Assessment Addendum. The draft HHRA evaluated the risk to a variety of receptors based on groundwater modeling and on the short-term air studies. The addendum revised the risk calculations based on EPA's revised toxicity values for trichloroethylene (TCE).

### **Contact Information**

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### **Copies of Draft Work Plan**

Copies of the Draft Long Term Indoor Air Quality Monitoring Work Plan are available at:

### **Mountain View Public Library**

Reference Desk  
585 Franklin Street  
Mountain View, California 94041-1998  
Day Hours  
Monday-Thursday: 10 am - 9 pm  
Friday-Saturday: 10 am - 6 pm  
Sunday: 1 pm - 5 pm

### **Sunnyvale Public Library**

Reference Desk  
665 West Olive Avenue  
Sunnyvale, California 94086-7655  
Day Hours  
Monday-Thursday: 10 am - 9 pm  
Friday-Saturday: 10 am - 6 pm  
Sunday: Noon - 8 pm

### **Public Review Schedule**

The Draft Long Term Indoor Air Quality Work Plan will be available from May 8, 2003 until June 9, 2003.

