October 31, 2001

MEMORANDUM

SUBJECT: USEPA Region 9 Summary of Quality Assurance Planning for the "Bucket Brigade" Community Air Sampling Project, Contra Costa County, California

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In 1998 USEPA Region 9 funded a community air sampling project in Contra Costa County California. The project was called the "Bucket Brigade" Community Air Sampling Project (Bucket Brigade). A quality assurance project plan (QAPP, September 1998) detailing project objectives, sample collection, quality assurance, data use, and data interpretation activities, was prepared by Contra Costa Health Services, Communities for a Better Environment, and other members of the Regional Accident Prevention Coalition. The USEPA Region 9 QA Office assisted the Bucket Brigade in developing a quality system to meet project objectives. The QAPP detailing this quality system was approved by USEPA Region 9. It is the responsibility of the Bucket Brigade to ensure proper implementation of this QAPP. USEPA Region 9 has not performed audits of the Bucket Brigade program, tracked compliance with the Bucket Brigade QAPP, or performed data quality review on Bucket Brigade data.

Contra Costa County, located in the San Francisco Bay Area, has a significant number of refineries and other large industrial facilities. Periodically, there are unintentional releases of chemicals from facilities in Contra Costa County. In the past these releases have been self reported by facilities and have generated odor and occasional health complaints from nearby residential areas. The Bucket Brigade is a sampling and analytical program which enables members of the community to collect environmental information during chemical releases. The sample collection device used by the Bucket Brigade is a five-gallon plastic bucket modified to serve as a negative pressure Tedlar bag collection device. The air samples collected into Tedlar bags are analyzed by routine USEPA analytical methods for ambient air.

The Bucket Brigade QAPP, approved by USEPA Region 9, indicates that the project is for a "Pilot Program." The main technical objective of the project is to produce data of sufficient quality to "provide the community and the County with more information about chemicals in the air than is currently available." The Bucket Brigade QAPP establishes a program which provides data of sufficient quality meet this objective by adaptation of an established sampling technique, use of established analytical methods, quality control (QC) checks, and a data review and qualification process.

To expand to use of Bucket Brigade data beyond the objective of the 1998 QAPP, there are mechanisms to improve and/or better understand the quality of the Bucket Brigade data. The

following areas of concern and how they are addressed by the Bucket Brigade QAPP should be noted when considering additional uses for Bucket Brigade data (these areas are given as examples and not intended to be comprehensive).

* The sampling design for any given incident may have insufficient spacial and temporal coverage, and therefore may not be representative of a worst case exposure.

This concern could be partially mitigated by collection of multiple, coordinated samples and by the use of air modeling techniques. USEPA Region 9 is unaware what steps the Bucket Brigade has taken to this end. However, safety concerns and common sense would preclude representative bucket sampling in areas under a "shelter in place" or evacuation order.

* The Tedlar bag and bucket sampler storage conditions in the field are not well controlled and could lead to unintended contamination.

This concern has been partially mitigated by the Bucket Brigade's submission of unused Tedlar bags stored and shipped along side "incident" samples to the laboratory for chemical analysis (field blanks).

* Community members are not accustomed to field sampling.

The Bucket Brigade has a sampling manual and training that can be given to community samplers.

* Some chemical species are not stable or cannot be recovered from Tedlar bags.

This is not well controlled. QA could be improved by verifying the stability of tested chemicals in Tedlar bags.

* There may be laboratory problems with the data collected.

This has been partially controlled for by running laboratory split samples which are analyzed by the USEPA Region 9 laboratory. However, for some data uses, it is necessary to also conduct laboratory audits and validation of "raw" laboratory data.

The Bucket Brigade program as developed in the QAPP provides limited information, not readily available from other sources, about airborne chemicals potentially associated with accidental releases. This data may be valuable to facilities and governmental agencies concerned with protecting public health and the environment.

Questions or comments regarding this review should be referred to me at (415) 972-3799.