

***Final Work Plan - California Regional PM10/PM2.5 Air Quality Study Ammonia Emissions Improvement Projects in Support of CRPAQS Aerosol Modeling and Data Analyses: Draft Ammonia Inventory Development (page 2-15)***

**Landfills**

The ENVIRON team has reviewed the Solid Waste Information System (SWIS) Database of the California Integrated Waste Management Board to identify landfills in the Study Area. Activity data, the amount of methane produced, will be developed from data reported in California Air Resources Board emission inventory database (CEIDARS). This data is reported as total organic gases (TOG) and reactive organic gases (ROG). Total methane is calculated as the difference of TOG minus ROG. No new emissions data for ammonia was found during the literature search. The team will adopt the same weight ratio of 0.7 NH<sub>3</sub> to methane used in the previous inventory (STI, 1998) in order to estimate emissions.

The ENVIRON team will fill in data for large landfills identified in the SWIS database which are not reported in CEIDARS. Data for similar sized landfills will be used to fill in this data. Previous researchers have found this source category to be minor (ATC 2000, Radian 1991, STI 1998), therefore, the ENVIRON team will not expend significant resources in contacting facilities to produce the most comprehensive database possible or filling in data lacking from the CEIDARS database

Landfill emissions will be allocated as point sources based on the latitude/longitude information from the SWIS database. Because of the scarcity of emissions data, and the relatively minor contribution from this source, no temporal profiles will be developed.

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**2.0 Municipal Solid Waste Landfills**

As specified in the Work Plan, due to a lack of any U.S. emissions data for landfills, emissions were estimated using the same methods as in the previous inventory (STI, 1998). This involved the use of an ammonia to methane emissions ratio (0.007). Methane emissions were taken from the year 2000 emissions data submitted to CARB by the local districts (Bhargava, 2001). County-level emissions were allocated to specific geo-coordinates of active landfills within each county from the California Integrated Waste Management Board's Solid Waste Information System (SWIS). It should be noted that the year 2000 emissions data received from CARB did not contain any emission estimates for the following counties: Alpine, Nevada, San Francisco, and Sutter.

Discussions with two landfill gas experts revealed no known source of ammonia

associated with landfill gas. It is possible that the ammonia measured in support of the European emission factor used by STI (1998) was associated with the decomposition of some daily cover material (e.g. green waste, sewage sludge). Still, the emission estimation method has a high level of uncertainty. Temporal allocation of emissions is assumed to be even throughout the year. No information on diurnal allocation of emissions was found.