

## **Analytical Performance Criteria:**

### **Field Evaluation of Diacetyl Sampling and Analytical Methods**

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Diacetyl and acetoin are ketones that are used extensively in the flavoring and food production industries. Both compounds are monitored in the workplace to assess exposures, to aid in the selection of respirators, and to evaluate the effectiveness of ventilation and other control procedures. Recent laboratory investigations indicate that the NIOSH diacetyl method #2557 is affected by humidity, resulting in an underestimation of true diacetyl concentration. To aid in the evaluation of sampling and analytical methods for diacetyl, a field comparison between new and existing sampling collection methods was conducted. Side-by-side field samples were collected and analyzed according to NIOSH method 2557, OSHA method PV 2118, and a modified version of the OSHA method in flavoring manufacturing facilities. The results of the field work confirm the tendency of the NIOSH method to underestimate the true concentration of diacetyl. However, no mathematical correlation was found in this data set which would produce an adjustment factor to allow for correction of results. A NIOSH laboratory based study and a chamber study with generated atmospheres are also underway to investigate the potential development of a correction factor for previously collected data with the NIOSH method. It is recommended that NIOSH method 2557 not be used to determine the concentration of airborne diacetyl. Until a new method is developed, NIOSH investigators currently utilize the modified OSHA method with 400/200 mg media and collect measurement for both temperature and relative humidity during investigations or research studies.