



# **Contamination Knowledge Report: Clean Room and N<sub>2</sub> Purge Samples from KSC**

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## **Summary**

This report summarizes analyses of clean room and nitrogen purge samples acquired from the Payload Hazardous Servicing Facility (PHSF) at Kennedy Space Center. The gas samples were acquired by S. Messenger and C. Lorentson on May 25, 2016, following the May 20 arrival of the OSIRIS-REx spacecraft for launch preparations. At the time the samples were taken, the spacecraft was undergoing spin balance testing and the nitrogen purge line had been validated but was not yet connected to the spacecraft.

Gas samples were measured by members of the Toxicology and Environmental Chemistry-Air Quality (TEC) group at JSC. Abundances/abundance limits were determined for 100 species from a standard library. Among these, only three species were present in abundances above detection limits in the PHSF air sample, all of which are attributable to cleaning solvents accepted for use in the PHSF. The most abundant species, isopropanol, is used to liberally wash all gloves upon entrance into the PHSF clean room. No species were measured above background in the N<sub>2</sub> purge line. No action beyond this report is recommended.

## **Procedures**

Gas samples were collected in cleaned, purged, and evacuated 500 ml stainless steel canisters supplied by the TEC laboratory. The air sample was obtained approximately two meters from the spacecraft. The N<sub>2</sub> purge line sample was acquired after it was verified for quality but before it was connected to the spacecraft. The N<sub>2</sub> line was purged for two minutes prior to connecting to the sample canister.

Gas analyses were performed by gas chromatography and gas chromatography/mass spectrometry. The raw data were quantified in terms of mass/volume by reference to a surrogate gas introduced into the containers prior to sampling.

## **Results**

With the exception of isopropanol and acetone, no species were above background in the PHSF air sample. No species were measured above background in the N<sub>2</sub> purge line. Detailed results and procedures are summarized in the attached report from the TEC group.