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Hazardous Material Summary Tables (HMSTs)

Hazardous Materials Summary Tables (HMSTs) are a compilation of the chemical, biological, and flammability hazards of materials on a given flight or mission. HMSTs are required by Safety for all Programs, including but not limited to ISS, Commercial Crew Program (CCP), Multi Purpose Crew Vehicle (MPCV), and Gateway. Johnson Space Center (JSC) toxicologists evaluate the toxic hazard level of all liquids, gases, particles, or gels flown on or to any manned U.S. spacecraft. The biosafety hazard level and flammability levels are assigned by JSC microbiologists and materials experts and are documented in an HMST and in a computerized in-flight version of the HMST called the HazMat (Hazardous Materials) database.

How To Obtain Toxicological Hazard Assessments

"Requirements for Submission of Data Needed for Toxicological Assessment of Chemical and Biologicals to be Flown on Manned Spacecraft"

- JSC 27472 (PDF, 766KB) (https://www.nasa.gov/sites/default/files/atoms/files/jsc_form_27472.pdf) defines the terms

"chemicals" and "biological materials" as applied to items being flown on or to any U.S. spacecraft. It explains who must submit information to the JSC toxicologists concerning the materials to be flown and specifies what information is needed. It provides schedules, formats, and contact information.

- Additional US requirements for biological materials can be found on the Biosafety Review Board (BRB) page (https://www.nasa.gov/feature/biosafety-review-board-brb).
- Additional US requirements for environmental control and life support (ECLS) assessments can be found in JSC 66869 (PDF, 698KB) (http://www.nasa.gov/sites/default/files/atoms/files/eclss_assessments_sep-2015_baseline_-_signed.pdf).

Data Submission

For **all flights** to ISS and all Artemis requests (Orion, Gateway, Human Lander System (HLS)), please submit data via the electronic hazardous materials summary table (eHMST) tool (https://mycmc-apps-ext.jsc.nasa.gov/eHMST/). If you do not have access to this tool, please submit a NAMS request for access to JSC – CMC External Tools.

NOTE: For experimental payloads/hardware planned for launch on a Russian vehicle, stowed and/or operated on the Russian Segment of ISS, or planned for return or disposal on a Russian vehicle, we strongly encourage payload providers to submit biological and chemical data to the Russian Institute for Biomedical Problems (moukhamedieva@imbp.ru (mailto:moukhamedieva@imbp.ru) OR barantseva (mailto:barantseva@imbp.ru)@imbp.ru (mailto:barantseva@imbp.ru)).

Hazard Assessments

Toxicological hazard assessments are conducted according to JSC 26895 - Guidelines for Assessing the Toxic Hazard of Spacecraft Chemicals and Test Materials (/sites/default/files/atoms/files/jsc_26895_rev1_final.pdf). The resulting Toxicity Hazard Level (THL) in combination with the BioSafety Level (BSL) and Flammability Hazard Level (FHL)

form the basis for the combined Hazard Response Level (HRL) used for labeling and operational response per flight rule B20-16.

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