



National Aeronautics and Space Administration

HUMAN HEALTH AND PERFORMANCE

Exploring Space | Enhancing Life

Environmental Monitoring, Analysis and Data Assessment

Understanding Environmental Conditions of Humans in Extreme Environments

Our unique environmental monitoring, analysis, and data assessment expertise and capabilities ensures environmental standards and crew health and safety are achieved for human spaceflight—as well as technologies—into integrated testing of human-system interfaces, human performance into system concepts, and mission operations.

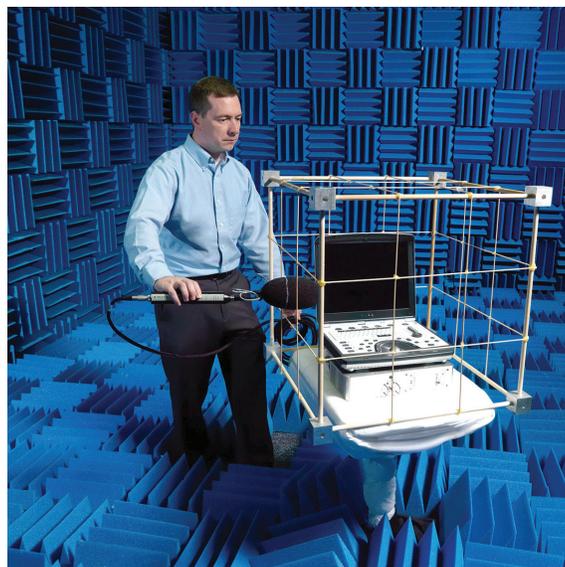
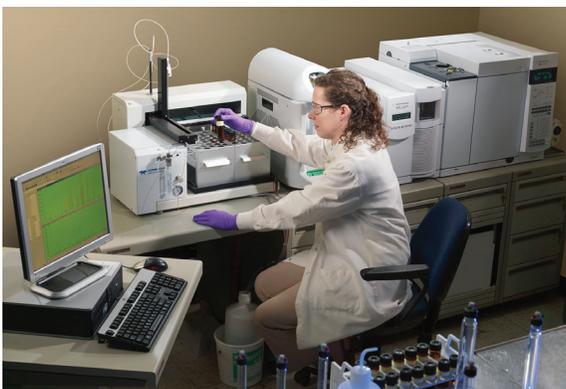
World Renowned Skills and Unique Capabilities

The Johnson Space Center, a world leader in human spaceflight, possesses unique knowledge, skills, and capabilities that can be applied to solving human health and performance challenges here on earth—particularly those related to operating in extreme and harsh environments.

NASA collaboration expertise is available in the areas of environmental monitoring, analysis,



and data assessment. This expertise ranges from environmental research to operational and hardware requirements development, design & implementation, verification/validation, monitoring, analysis, and data assessment. Research capabilities include numerous unique space environmental laboratory facilities.



Johnson Space Center

The enclosed JSC unique Environmental Monitoring, Analysis, and Data Assessment expertise, skills, knowledge and capabilities are available to be used to support establishment of spacecraft environmental requirements, pre-flight analyses and planning, and evaluation of actual on-orbit internal environmental conditions. Research activities include the development of advanced environmental monitoring technology concepts that could be used for terrestrial applications; military (e.g. Army and Navy) uses and operations; to aid in development of capabilities for Commercial Crew; new space mission endeavors such as an orbiting commercial venture and space tourism; extreme environments terrestrial operational challenges of working and living in extreme and harsh environments; environmental monitoring research and development; and optimizing for human health and performance.

Acoustics and Noise Control Lab

JSC has a unique Acoustics and Noise Control Lab that ensures safe, healthy, and habitable vehicle acoustic environments in which astronaut crews can live, communicate, and work which includes acoustics modeling, allocating requirements, and implementing appropriate noise controls using flight-certified acoustics materials as well as testing and noise remediation assistance.

Toxicology

JSC has a unique Toxicology capability that protects crews from toxic exposures during extreme environment operations by setting limits to protect crew health; assessing health hazards of payload/system chemicals based on composition, concentration, and volume; evaluating air quality real-time; and performing off-gas material testing of hardware.

Water and Food Analysis

JSC has a unique Water and Food Laboratory capability that provides the highest quality crew health analytical data for extreme environment water and food samples.

Advanced Environmental Health

JSC has the unique capability to perform research studies to monitor the physical environment in which crew live and work—setting limits for the amount of crew exposure to chemicals, bacteria, fungus, and contaminants (unknown environment (planetary) soils). The Environmental Health Lab provides analyses of personal and area samples for possible workplace exposure to solvents and other organic chemicals, metals (in coated surfaces and air), asbestos (in air and building materials) and any other potential workplace health hazards including mold and fungi.

Microbiology

The JSC Microbiology Community is concerned with addressing issues related to infectious disease, microbial ecology of spacecraft, and effects on crew health. This community is comprised of an integrated team of certified medical technologists, environmental microbiologists, immunologists, industrial hygienists, industrial microbiologists, mycologists, and Biosafety professionals who work in the JSC Microbiology Laboratory. The laboratory processes environmental samples (such as air, potable water, spacecraft surfaces, in-flight hardware, and food) to ensure that microorganisms do not adversely affect crew health or system performance.



For the benefit of all

For more information:

NASA Human Health and Performance
Center at

<http://NHHPC.nasa.gov> or go to:

<http://www.nasa.gov/centers/johnson/slsd/>

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