2019 ACMT Annual Scientific Meeting
Open Mic Competition

Title: The Toxicology of Space Travel

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Abstract: Astronauts face unique health challenges and exposures while in space. Recent technological advances and interest in space exploration and colonization could make space accessible to more humans thus further increasing the number of toxicologic exposures.

Toxins in space are diverse and unique. Some of them are predictable such as off gassing from humans and equipment. Off gassing can saturate the shuttle's environment with diverse compounds such as aldehydes, ketones, hydrocarbons, alcohols, toluene among others. In addition, shuttle atmosphere contaminants can be unexpected. For example, overheating and fires can generate toxic gases such as cyanide, hydrogen fluoride, carbon monoxide, carbon dioxide, Teflon and ultrafine particles.

In addition, chemical disinfectants used to recycle water such as iodide compounds and microbial superinfection can be problematic.

On top of that, the space is rich in in high energy ionizing cosmic rays and any outer space excursion can expose individuals to Martian and Lunar dusts. Furthermore, dust can be brought back in and contaminate the shuttle's environment leading to pulmonary toxicity.

Objective 1: Identify potential sources of toxins during space travel
Objective 2: Discuss historical toxicologic emergencies in space
Objective 3: Recognize the limitations in assessing the risks from such exposures