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RESEARCH OF MONITORING THE USE OF GARMENT, UNDERWEAR AND PERSONAL
HYGIENE MEANS IN 17-DAY AND 120-DAY ISOLATION CONDITIONS OF THE SIRIUS PROJECT

Abstract

Washing of underwear, garment and Personal Hygiene Means in the space flight conditions are not provided at present time. New underwear, garment, and Personal Hygiene Means (napkins, towels for personal hygiene etc.) are delivered to space ships and orbital stations from the Earth and then, after short-term use, they are disposed of in the waste collection, where they accumulate in significant quantities and masses. The possibility of space missions depends on the capacity of the spacecraft, and the possibility of space missions becomes problematic due to the large weight of stocks. Russian side (SSC RF-IBMP RAS) initialized an international project SIRIUS in a unique ground-based experimental complex of the IBMP. During the implementation of the first and second stages of the SIRIUS project we conducted a study of monitoring the use of garment, underwear and Personal Hygiene Means in 17-day and 120-day isolation conditions. Two types of questionnaires were used for questioning. Questionnaire No. 1 was on monitoring the using of garment and underwear. Questionnaire No. 2 was concerned to the assessment of Personal Hygiene Means. In addition we studied pollution of underwear from two male operators during 4 simulations spacewalk on the moon's surface. The main research results showed the effectiveness of the sanitary-hygienic system and its functional significance. During a 120-day experiment, a crew of 6 people needed more than 500 kg of underwear, garment, bed linen, towels, Personal Hygiene Means and toilet items. Studies have shown that for isolation conditions it is extremely important to comply with sanitary-hygienic, epidemiological standards, and the creation of a sufficient amount of underwear, garment and Personal Hygiene Means. The results obtained contribute to the creation of optimal sanitary and hygienic conditions for isolation, including in hermetically sealed objects, manned spacecraft, and will help maintain the health and performance of crew members. It is necessary to develop devices for such sanitary-hygienic procedures as washing clothes, taking a shower, washing hands, combined with a regenerative life-support system for long-term space flights and for stations on the Moon and Mars.