1. Record Nr. UNINA9910973815103321

Titolo	Methods for developing spacecraft water exposure guidelines / / Subcommittee on Spacecraft Water Exposure Guidelines, Committee on Toxicology, Board on Environmental Studies and Toxicology, Commission on Life Sciences, National Research Council
Pubbl/distr/stampa	Washington, D.C., : National Academy Press, c2000
ISBN	9786610185382 9780309171748 0309171741 9781280185380 1280185384 9780309563000 0309563003
Edizione	[1st ed.]
Descrizione fisica	1 online resource (173 p.)
Collana	Compass series
Disciplina	629.47/7
Soggetti	Space vehicles - Water-supply Water reuse Astronauts - Health risk assessment
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	""Methods for Developing Spacecraft Water Exposure Guidelines""; ""Copyright""; ""OTHER REPORTS OF THE BOARD ON ENVIRONMENTAL STUDIES AND TOXICOLOGY""; ""OTHER REPORTS OF THE COMMITTEE ON TOXICOLOGY""; ""Preface""; ""Contents""; ""Abbreviations""; ""Executive Summary""; ""WATER CONTAMINANT SOURCES""; ""RANKING CONTAMINANTS FOR RISK ASSESSMENT""; ""DATA FOR ESTABLISHING SWEGS""; ""RISK ASSESSMENT""; ""SPECIAL CONSIDERATIONS FOR NASA""; ""EXPOSURE GUIDELINES SET BY OTHER ORGANIZATIONS""; ""1 Introduction""; ""WATER CONTAMINANTS""; ""APPROACH TO THE STUDY""; ""REFERENCES"" ""2 Sources, Treatment, and Monitoring Of Spacecraft Water Contaminants""""OVERVIEW""; ""DESIGN DRIVERS""; ""ISS WATER-QUALITY STANDARDS""; ""SOURCES OF SPACECRAFT WATER

CONTAMINATION""; ""HUMAN URINE""; ""Untreated Urine""; ""Chemical Treatment and Distillation By-Products""; ""HUMIDITY CONDENSATE""; ""Condensate Sample Results""; ""Water Recovery Test""; ""Lunar-Mars Life Support Test Project""; ""Space Shuttle""; ""Mir Humidity Condensate""; ""Environmental Contributors to Spacecraft Humidity Condensate""; ""Hardware Off-Gassing""; ""Animal Wastes""; ""Mechanical Leaks""
""Microbial Metabolites""""""Payload Chemicals""; ""Utility Chemicals""; ""WASH WATER AND OTHER WASTE STREAMS""; ""Hygiene Water""; ""Detergents""; ""Chemicals from Personal Hygiene Products""; ""CHeCS Wastes""; ""CHEMICALS FORMED IN THE WATER TREATMENT SYSTEM""; ""SYSTEM FAILURES AND INCOMPLETE PROCESSING OF INFLUENT""; ""CHEMICALS ADDED TO RETARD BACTERIAL GROWTH""; ""Iodine""; ""Silver""; ""REGENERATED WATER""; ""Inorganic Contaminants""; ""Shuttle Humidity Condensates""; ""Mir Humidity Condensates and Mir Reclaimed Water""; ""LMLSTP 60-d Product Water""; ""ORGANIC CONTAMINANTS""
""Humidity Condensate in Mir""""""LMLSTP 60-d Product Water""; ""Stage-10 WRT""; ""MONITORING WATER CONTAMINANTS""; ""SOURCE-WATER MONITORING""; ""In-Line Monitoring and Process Control""; ""Off-Line Monitoring""; ""SUMMARY""; ""REFERENCES""; ""3 Sources and Types of Data for Establishing Spacecraft Water Exposure Guidelines ""; ""CHEMICAL AND PHYSICAL CHARACTERISTICS OF A TOXICANT""; ""HUMAN STUDIES""; ""ANIMAL STUDIES""; ""IN VITRO TOXICITY STUDIES""; ""ADVANCES IN HEALTH EFFECTS ASSESSMENT""; ""NEUROBEHAVIORAL EFFECTS""; ""REPRODUCTIVE EFFECTS""; ""MUTAGENESIS""; ""MECHANISTIC STUDIES""
""SUMMARY""""""REFERENCES""; ""4 Risk Assessment Methods for Determining Spacecraft Water Exposure Guidelines""; ""HISTORICAL PERSPECTIVE""; ""Risk Assessment for Noncarcinogenic Effects""; ""Risk Assessment for Carcinogenic Effects""; ""RECOMMENDED APPROACH TO RISK ASSESSMENT""; ""Exploiting Similarities of Historical Approaches""; ""Benchmark-Dose Approach to Setting SWEGs""; ""BMD CALCULATION""; ""Central Estimate Versus Confidence Limit""; ""Estimating BMDp for Various Toxic Effects""; ""EXPOSURE CONVERSION""; ""Target Tissue Dose""; ""Differences in Duration""; ""Species Conversions""
""Different Routes""

Sommario/riassunto

The National Aeronautics and Space Administration (NASA) maintains an active interest in the environmental conditions associated with living and working in spacecraft and identifying hazards that might adversely affect the health and well-being of crew members. Despite major engineering advances in controlling the spacecraft environment, some water and air contamination appears to be inevitable. Several hundred chemical species are likely to be found in the closed environment of the spacecraft, and as the frequency, complexity, and duration of human space flight increase, identifying and understanding significant health hazards will become more complicated and more critical for the success of the missions. NASA asked the National Research Council (NRC) Committee on Toxicology to develop guidelines, similar to those developed by the NRC in 1992 for airborne substances, for examining the likelihood of adverse effects from water contaminants on the health and performance of spacecraft crews. In this report, the Subcommittee on Spacecraft Water Exposure Guidelines (SWEGs) examines what is known about water contaminants in spacecraft, the adequacy of current risk assessment methods, and the toxicologic issues of greatest concern.