

OCCUPATIONAL SAFETY AND HEALTH OF ARCTIC DISASTER AND OIL SPILL RESPONSE WORKERS

G. Conway¹, W. Parker², J. Burton³

¹CDC/NIOSH, ²Parker Assoc Inc., ³CDC/NIOSH Alaska Pacific Regional Office

There is currently very little in the scientific literature on the topic of worker safety and health in oil spill response in the Arctic, other ice-covered waters, and in very cold surface environments. Instead, issues of detection, mechanical recovery, and the in-situ burning of oil products are the main areas of emphasis in Arctic oil spill response research. Therefore, the purpose of this project, approved by EPPR in Oslo, October 21, 2011, is to conduct research, develop guidelines, and recommend effective measures to prevent morbidity and mortality among oil spill response workers in the Arctic environment. This project will conduct research on oil spill response operations to identify the hazards that oil spill response workers may encounter, suggest strategies to either control or eliminate those hazards, and provide information to public health responders deployed to protect oil spill response workers. This international, collaborative project is intended to improve regional operational capabilities to protect Arctic oil spill response workers by providing information to enhance safety and health practices during an oil spill response. The information developed during this project will include preparedness tools that will assist governments and agencies in identifying and controlling hazards that may be encountered by workers responding to an oil spill in the Arctic. The primary output, intended as a supplement to the Arctic Council's "Field Guide for Oil Spill Response in Arctic Waters", and other EPPR preparedness and response products, will represent a significant contribution to the understanding and control of the unique hazards that exist to workers responding to an oil spill in the Arctic. The information will serve to guide operational planning and response by the indigenous peoples of the Arctic and the eight member nations of the Arctic Council.

Contact: G. Conway (gconway@cdc.gov)

HUMAN HEALTH VS. LIFESTYLE AND ENVIRONMENT IN GREENLAND: GENETICS, BIOMARKERS AND EFFECTS – AN OVERVIEW

E.C. Bonefeld-Jorgensen

Centre for Arctic Medicine, Aarhus University

An overview will be presented that summarizes data from Greenland on human biomarkers of persistent organic pollutants (POP) exposure and health effects. The focus will be on the hormone disruptive potentials, health risk and genetic sensitivity biomarkers. Biomonitoring in Greenland showed a general geographical and gender

differences of serum POP levels, which were primarily related to diet and lifestyle. High intake of traditional Greenlandic diet and smoking caused higher concentration of POPs in the blood. The highest POP values were found on the East coast of Greenland. A general inverse relation between high serum POP concentration and estrogen receptor and aryl hydrocarbon-receptor transactivity but a trend towards increased androgen-receptor activity was found. In conclusion, the actual mixtures of serum POPs in Greenlandic Inuit have an endocrine disrupting potential. A survey of perfluorinated compounds (PFCs) in Greenlandic Inuit showed a trend to higher PFCs in the Nuuk compared to non-Nuuk Inuit. In general, male had higher serum levels of PFCs. A recent study on breast cancer risk in Greenlandic Inuit showed that the cases had significantly higher level of legacy POPs and PFC compared to their controls. Also, the frequency of certain gene polymorphisms differed between the cases and controls. Whether epigenetic changes upon exposure to POPs might be involved in the risk of breast cancer will be discussed. The studies were carried out with financial support from the Danish Ministry of the Environment (DANCEA), the Health Science Research Council, Aarhus University Research Fund, The national Institute of Health (NIH, United States), and the European Union.

Contact: E.C. Bonefeld-Jorgensen (ebj@mil.au.dk)

HEALTH RISKS OF POPULATIONS LIVING IN THE ARCTIC

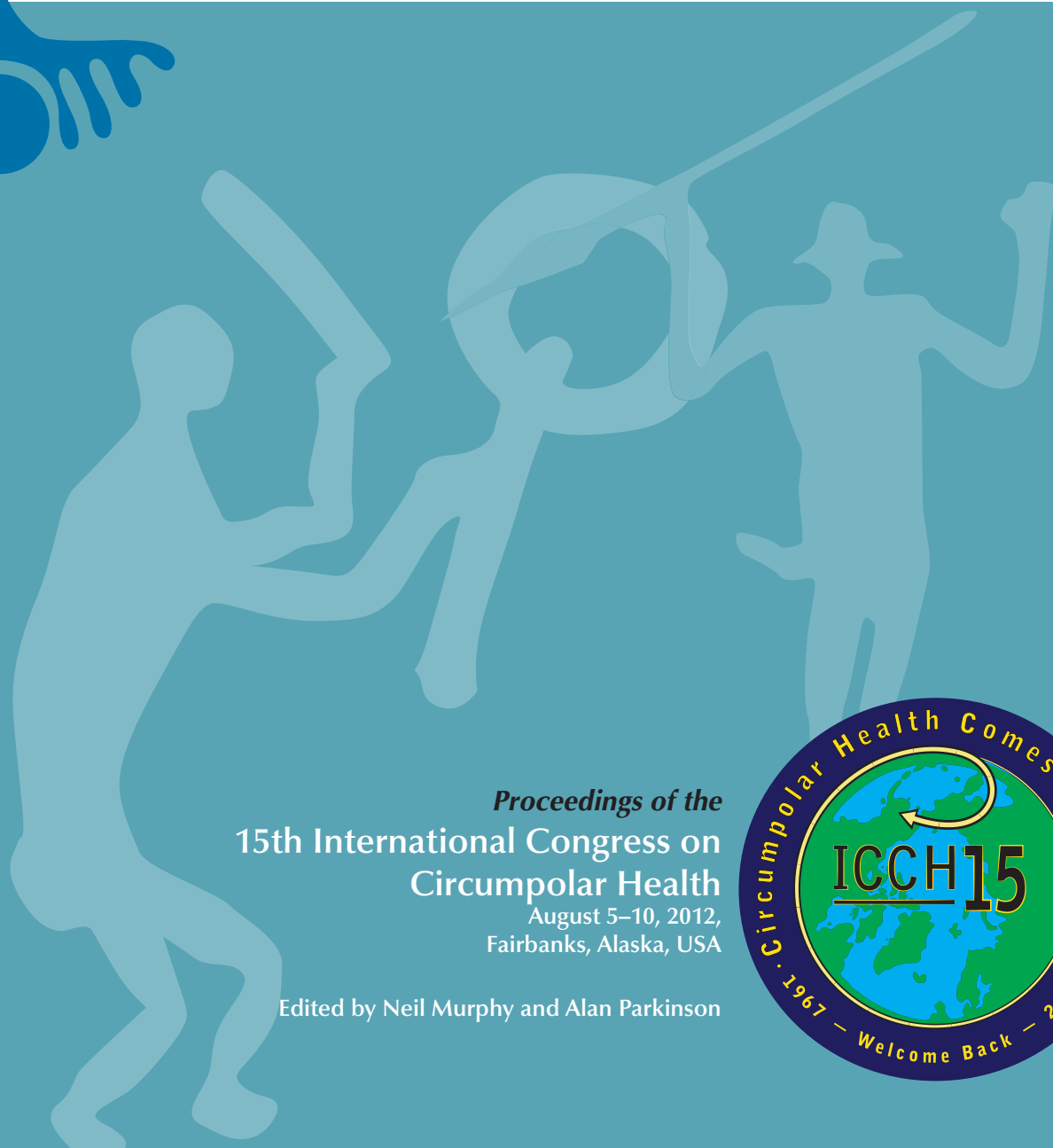
A. Rautio¹, A. Huusko¹, K. Abass¹, P. Nieminen¹, H. Lehtiniemi¹, K. Vahakangas²

¹University of Oulu, ²University of Eastern Finland

The effects of global and climate change affect Arctic regions and populations living there even more than other global areas. The changes have been already noticed in the environment, livelihoods, diets and living conditions, which all include also new diseases and risks for human health and well-being to be taken into account with the old killers, smoking and substance abuse. In the on-going EUfunded research, project ArcRisk (Arctic health risks) we have focused on contaminant exposure – health outcome relationships based on published epidemiological and other articles, reports and reviews. By using meta-analyses and other statistical methods our aim is to estimate exposure levels (cut-off-points of exposure) beyond which adverse health effects are more likely to occur in exposed populations. We did not find any correlation in the review of PCBs and sex-ratio. Classical meta-analysis has been shown to be impossible due the difficulties to harmonize published studies according to statistical standards (e.g. unhomogeneity of populations, statistical methods used or poor documentations of results). Same difficulties are also found in

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