



Testimony
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The Arctic Human Health
Initiative

Statement of

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Good afternoon, Chairman Stevens, Chairman Lugar and Members of both Committees. I am Alan Parkinson Deputy Director of the Centers for Disease Control and Preventions Arctic Investigations Program located in Anchorage Alaska. I am pleased to be here today to describe our national efforts to use the International Polar Year (IPY) and the Arctic Human Health Initiative (AHHI) to increase the visibility and awareness of human health concerns of arctic peoples and to coordinate at the national and international level research programs that will improve the health and well-being of arctic residents. As you have heard from previous speakers, the IPY is an intensive one year multidisciplinary program of collaborative international science, research, education and communication focusing on the Arctic and Antarctic regions.

The years 2007-2008 will mark the 50th anniversary of the International Geophysical Year and the third IPY. This event has been designated the 4th IPY by the National Academy of Science, International Council of Science, the World Meteorological Organization the Arctic Council and many other international organizations. This period of focused activity promises to “further our understanding of the physical and social process in polar regions, examine their globally connected role in the climate system and establish research infrastructure for the future, and serve to attract and develop a new generation of scientists and engineers with the versatility to tackle complex global issues.” U.S. activities during the IPY will focus on highlighting research, education and public outreach efforts and will be coordinated among Federal agencies and

international partners that support research in Polar Regions. Human health has not been a research theme for any previous polar year and we see this event as an opportunity for the U.S. to take a leadership role in the IPY by supporting research activities that will address the human health concerns of arctic communities and set the stage for an integrated approach to Arctic human health research beyond 2009.

Human health Concerns of Arctic Communities

Life expectancy in arctic populations has greatly improved over the last 50 years. In 1950, the life expectancy for an Alaska Native, the indigenous people of Alaska, at birth was 47 years compared with 66 years for the general U.S. population. By 2000, the life expectancy for Alaska Natives had increased to 69.5 years, a gain of over 20 years. Much of this improvement can be attributed to health research and public health programs that have resulted in a reduction in morbidity and mortality from infectious diseases, such as tuberculosis, and the vaccine preventable diseases of childhood. Reductions in infectious disease mortality for Alaska Natives have been especially dramatic. In 1950, 47% of deaths among Alaska Natives were due to infections, as compared with only 3% for non-Native Alaskans. By 1990, infectious diseases caused only 1.2% of the Alaska Native deaths, very similar to the 1% seen for non-Natives¹.

¹ Estimates on the proportion of mortality accounted for by infectious diseases are based on a catchment population size of 34,000 and 87,000 Alaska Natives, in 1950 and 1990, respectively. The estimated number of mortalities amongst Alaska Natives during these two years, was 575 and 565, respectively.

Public health research has resulted in innovations such as the provision of safe water supplies, sewage disposal, development of community based medical providers, that have contributed to improved care and access to care for injuries and illness. Research on the negative health effects of tobacco has lead to tobacco cessation and education programs. Mortality rates for heart disease and overall cancer rates are similar in arctic indigenous residents in relation to overall rates for the US, Canada, and northern European countries, with some exceptions (ie higher incidence of gastric, nasopharyngeal, renal cancers) not explained by known risk factors .

Despite these improvements in these health indicators of arctic residents, life expectancy is shorter and infant mortality rates are higher among indigenous arctic residents in the US Arctic, northern Canada, and Greenland when compared to arctic residents of Nordic countries. For example, life expectancy for Alaska Natives still lags behind the general U.S. population which was 76.5 years in 2000. Similarly, indigenous residents of US Arctic and Greenland have higher mortality rates for injury and suicide and hospitalization rates for infants with pneumonia and respiratory infections; many of these health disparities can be eliminated through the focused application of existing public health strategies.

A common theme across the Arctic is the rapid pace of change and its impact on the health and wellbeing of Arctic. Some of the major trends likely to affect the health status of Arctic peoples include economic changes, improved

transportation and communications, environmental pollutants and climate change.

Living conditions have and continue to change from an economy based on subsistence hunting and gathering to a cash-based economy. Across the circumpolar north there is increasing activity towards sustainable development via local resource development and widening involvement in the global economy. The influence of such changes on the physical health of arctic residents on the one hand have been positive, resulting in improved housing conditions, a more stable supply of food, increased access to more western goods, and decreases in morbidity and mortality from infectious diseases. But these changes in lifestyle brought on by the move away from traditional subsistence hunting and gathering and the societal changes brought on by modernization, in general, have resulted in an increase in prevalence of chronic diseases such as diabetes, hypertension, obesity and cardiovascular diseases. In addition, it is well known that child abuse, alcohol abuse, drug abuse, domestic violence, suicide, unintentional injury is also connected to rapid cultural change, loss of cultural identity and self esteem.

Globalization has meant improvements in the transportation infrastructure and communications technologies such as the internet and telemedicine innovations. Many communities once isolated, are now linked to major cities by air transportation, and are only one airplane ride away from more densely populated urban centers. Consequently these communities are now vulnerable to the

importation of new and emerging infectious diseases (such as influenza, SARS or SARS like infectious diseases, antibiotic-resistant pathogens such as multi-drug resistant tuberculosis).

Environmental contaminants are a global problem. Contaminants such as mercury, other heavy metals, PCBs, DDT, dioxins and other organochlorines, mainly originate in the mid-latitude industrial and agricultural areas of the globe but have migrated to the Arctic via atmospheric, river and ocean transport. Their subsequent bio-magnification in the Arctic food webs and appearance in subsistence foods such as fish, waterfowl, marine and land mammals, and the indigenous people who rely on these foods is of great concern to Arctic residents. Potential human health effects include damage to the developing brain, endocrine and immune system. A new concern is the role of mercury on cardiovascular diseases. Ongoing research will identify the levels and human health effects of these contaminants in arctic residents and will provide public health guidance on both the risks and benefits of consuming traditional foods.

The changing climate is affecting Arctic communities, and is bringing economic and health threats, as well as possible opportunities. The impacts of climate change on the health of arctic residents will vary depending on factors such as age, socioeconomic status, lifestyle, culture, location and capacity of the local health infrastructure systems to adapt. It is likely that the most vulnerable will be those living close to the land living a traditional subsistence lifestyle in remote communities, those already facing health related changes. Direct health related

impacts, for example may include an increase in injuries, hypothermia, and frostbite related to travel, unpredictable ice and weather conditions, and heat stress in summer. Indirect impacts include the potential changes in vector borne diseases such as West Nile virus, zoonotic infectious diseases such as brucellosis, tularemia or echinococcosis, changes in access to safe water supplies, failure of the permafrost and damages to the sanitation infrastructure, and infrastructure in general (buildings, transportation etc) changes in the traditional food supply as the migration patterns of subsistence species change in response to changing habitats. Ongoing research will identify climate sensitive indicators that will allow the prediction of health impacts and the development of mitigation strategies.

The Arctic is unique in many aspects. It can be defined by population, a population that is sparsely scattered over a very large geographical area, by climate and latitude, by seasonal extremes of temperature, light and dark, and by its spirit and history of cross border cooperation on issues of concern to Arctic communities.

International Cooperation on Arctic Human Health

There is a long history of international cooperation on many issues affecting arctic communities including human health and human health research.

The International Union for Circumpolar Health (IUCH) (www.iuch.org) is an organization comprised of the memberships of the American Society for Circumpolar Health, the Canadian Society for Circumpolar Health, the Nordic Society for Arctic Medicine, the Siberian Branch of the Russian Academy of Medical Sciences and the Danish/Greenlandic Society for Circumpolar Health. The IUCH promotes international cooperation, research, scientific information exchange and education in the areas of Arctic Health Policy, Birth Defects & Genetics, Cancer, Diet & Heart, Environmental Health & Subsistence Food Security, Family Health, Fetal Alcohol Syndrome, Health Surveys, HIV/AIDS, STDs, Indigenous Peoples Health, Infectious Diseases, Injury Prevention, Occupational Safety & Health, Population-Based Planning, Tobacco & Health, and Women's Health.

The Arctic Council (www.arctic-council.org) is a ministerial forum for cooperation between governments and indigenous peoples to address concerns and challenges common to Arctic states. Members include: the US (represented by the State Department), Canada, Greenland/Denmark, Iceland, Norway, Finland, Sweden, Russian Federation. Indigenous peoples are represented as Permanent Participants and include: Sámi Council, Aleut International, Inuit Circumpolar Conference, Russian Association Indigenous Peoples of the North, Arctic Athabaskan Council, and Indigenous Peoples Association. Current Arctic Council human health activities include monitoring the human health impact of

anthropogenic pollutants, climate variability, infectious diseases, and the expansion and assessment of tele-health innovations in Arctic regions.

National Cooperation on Arctic Human Health

The US Congress passed the Arctic Research & Policy Act in July 1984 finding that “Arctic Research expands knowledge, which can enhance the lives of arctic residents, increase opportunities for international cooperation and can facilitate national policy on Arctic Research.” The act established the Arctic Research Commission to promote and recommend research priorities. The commission recommended an interagency program focusing on the health concerns of Arctic residents, and designated that the National Institutes of Health (NIH) lead this effort with assistance from other agencies. We look forward to partnering with our sister agency on this recommendation.

Arctic research programs of the Centers for Disease Control and Prevention (CDC) are focused on improving public health in Arctic communities. Programs are currently conducted by the National Center for Infectious Disease (NCID), the National Center for Environmental Health (NCEH), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) and the National Institute of Occupational Safety and Health (NIOSH). These programs are conducted in collaboration with the State of Alaska Division of Public health, the Alaska Native Tribal Health Consortium, regional Tribal Health organizations, the Indian Health

Service, the National Institutes of Health, and other State and Local agencies and organizations

The Arctic Investigations Program, located in Anchorage Alaska, is one of three US-based field stations operated by the NCID. The mission of AIP is the prevention and control of infectious diseases among residents of the Arctic and sub-Arctic, and in particular the elimination of health disparities caused by infectious disease that exist among the indigenous populations of these regions. The AIP has led efforts to eliminate Hepatitis A & B, and invasive diseases such as meningitis caused by *Haemophilus influenzae* type b, and pneumonia caused by *Streptococcus pneumoniae* in the US Arctic. The Division of Environmental Hazards and Health Effects of the NCEH together with the Alaska Native Tribal Health Consortium and the AIP are concluding studies of the level of human exposure to environmental pollutants in the Arctic, and the potential role of environmental contaminants as cofactors in breast cancer in Alaska Natives. The NCCDPHP is beginning a study to generate new information on nicotine and carcinogen exposure in users of commercial and home made chewing tobacco. The results will be used to generate public health messages for local tobacco control programs. The Alaska Field Station of the National Institutes of Occupational Safety and Health was established to decrease the number and rate of work-related injuries among industries that face extreme hazards due to the Arctic environment. Through research, outreach with industry and community partners, and active prevention activities has resulted in a 60% decrease in the

number of occupational fatalities since 1990. These CDC Program accomplishments and plans are reported biennially in the Interagency Arctic Research Policy Committee Report of US Arctic Research published by the National Science Foundation Office of Polar Programs.

The AHHI and the International Polar Year

The Arctic Human Health Initiative (AHHI) is an IPY Arctic Council project, led by the US Department of State, and the CDC. The aim of AHHI is to increase public and political awareness and visibility of human health concerns of arctic peoples, foster human health research, promote health strategies that will improve the health and well-being of all Arctic residents. The AHHI will coordinate IPY projects that focus on Arctic human health research and that will advance the joint circumpolar health research agendas of the Arctic Council and IUCH.

Priority IPY human health research needs of arctic communities includes studies that include the assessment and mitigation of human health effects of:

- Anthropogenic pollution in arctic regions.
- Oil, gas and other sustainable development activities.
- Contaminants and zoonotic infectious diseases on subsistence species and the traditional food supply.
- Climate variability

- Infectious diseases including tuberculosis, HIV/AIDS, hepatitis, vaccine preventable diseases, emerging infectious diseases such as Avian influenza.
- Chronic diseases such as cancer, cardiovascular diseases, obesity and diabetes.
- Behavioral health issues, such as suicide, interpersonal violence and substance abuse, and unintentional injuries.

Human health surveillance, monitoring and research networks allow the monitoring of diseases of concern in Arctic communities through the development of standardized study protocols, data collection, laboratory methods, and data analysis. These networks allow the monitoring of disease prevalence over time, the determination of risk factors for disease and evaluation and implementation of disease prevention and control strategies. For example, the CDC's AIP coordinates the International Circumpolar Surveillance (ICS) of infectious diseases, which links hospital clinical and public health laboratories and institutes in the US Arctic, northern Canada, Greenland, Iceland, Norway, Finland and northern Sweden for the purposes of monitoring invasive bacterial diseases that cause pneumonia, meningitis and blood stream infections. During the IPY this system will be expanded to include the monitoring of tuberculosis in Arctic countries, and include public health centers in 14 regions of northern Russian Federation.

As of September 15, 2006 there have been more than 1145 Expressions of Interest and 222 full proposals endorsed by the IPY Joint Committee to undertake research projects during the IPY. A full description of the AHHI (full proposal number 167) can be viewed at www.ipy.org. The proposal has been designated by the IPY Joint Committee as a coordinating proposal under which other human health related research proposals will be managed. To date 13 Expressions of Intent and 8 full proposals from five of the eight Arctic countries have been clustered within the AHHI.

The AHHI will coordinate research projects through an International Steering committee led by the CDC with representation from the International Union for Circumpolar Health, Arctic Council human health working groups, indigenous people's organizations, World Health Organization, the Fogarty International Center of the National Institutes of Health and other partners. The overall role of the steering committee will be to carry out the aim of AHHI, review and endorse proposals, identify research gaps, evaluate progress, facilitate reporting of research findings to the research community, communities at risk, policy makers and the general public, and guide the direction of human health research beyond IPY.

The IPY presents a unique opportunity to focus public and political attention on health concerns of arctic communities and develop collaborative, international research programs that will address those concerns. The improvements in health status already achieved by Arctic peoples provide hope that through

concerted effort and clear vision, existing health challenges and disparities can also be overcome. We believe that U.S. leadership and scientific contributions to the International Polar Year Arctic Human Health Initiative are an important step.

Thank you for the opportunity to share this information with you. I am happy to answer any questions.