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Traditional Knowledge and Community-Specific Living as the Basis for Relevant Risk Assessment: New Tools and Approaches

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Background and Objectives: Until now, risk assessment approaches were designed with the typical Westernized commercial community in mind, using averaged values for critical parameters, thus disguising subpopulations bearing disproportionate risk. Because daily activities and diet define exposure opportunities, people eating subsistence foods or living culturally unique lifestyles are invisible in risk assessments. The objective was to develop new tools and approaches that reflect the real community diets, activities, and characteristics, including seasonal and personal variability. These tools also should expand community capacity to harvest their traditional knowledge and participate in health and policy decision-making.

Methods: New software and methods were developed to: (1) utilize any form of information to construct relevant community-specific dietary and activity profiles; (2) accomplish aggregate risk assessment reflecting possible disproportionate exposure and risk; and (3) consider cultural and nutritional benefits together with the risks in the food, water, and environment. Communities in Alaska and Canada tested early versions of the software to assess its relevance and ability to assist their decision-making.

Results: Software has been developed and tested that utilizes all forms of information and accomplishes community-specific risk assessment. Multiple chemicals and stressors can be simultaneously considered. Traditional knowledge can be applied. Software operation and interpretation require technical assistance.

Conclusions: New software and methodological approaches now exist that are relevant to unique communities and people with unique diets and lifestyles or cultural practices. These tools can expand community capacity in health and policy decision-making. Nutritional profiling capacity and community training are critical next steps. The software is available and free.