

## Introduction to the Radiofrequency Toolkit

The Radiofrequency Toolkit was developed in response to requests from BC's medical and environmental health officers to the British Columbia Centre for Disease Control (BCCDC) for assistance in assessing and communicating the risk to health of the many devices and applications which emit radiofrequency (RF) waves. Health officers have been asked for their advice and sometimes for their involvement on issues as varied as whether children should use mobile phones, where mobile phone towers should and should not be located, whether WiFi should be allowed in schools, whether baby monitors are safe, and increasingly about the transmission strength of BC Hydro's new Smart Meters, and whether Smart Meters cause a variety of health effects.

As elsewhere, individuals and community advocacy groups in BC have expressed concerns about the widespread use of RF and about specific applications. Much of the concern is directed to wireless communication despite RF having been the basis for radio transmission since the 1920s, and despite its extensive use in health care and in industry. Information on RF and RF safety, while widely available, is often also highly technical and not easily understood.

The toolkit was a two-year project involving staff at the Environmental Health Services of BCCDC and the National Collaborating Centre for Environmental Health (NCCEH), a program funded by the Public Health Agency of Canada and housed at the BCCDC. Students, public health residents, and specialists in epidemiology from outside BCCDC collaborated with BCCDC and NCCEH staff on the project. Among contributors to the toolkit are experts in radiation physics, exposure assessment, cancer studies, and environmental epidemiology.

Intended as informative rather than definitive, the toolkit summarizes and assesses scientific research published between 2006 and 2012 on the physics, exposure, and health effects of RF. The health risk of various RF-emitting devices is put into context by offering a framework for assessing the potential strength of an RF source on the body as a function of one's distance from it, and of the frequency, continuity, and intensity of the waves that the source emits. The toolkit is based both on collections of articles assessing the RF literature and on original research articles themselves. Draft chapters were kindly reviewed by a number of public environmental health practitioners whom the toolkit was intended to serve.

Several recent international reports complement information found in the toolkit. The UK Health Protection Agency (2012) and the Norwegian Institute of Public Health (2012), among others, have published major reviews of RF and its potential effects on health; both agencies concluded that there is little evidence of adverse impacts on the health of the general population by RF. Given that some research evidence indicates the possibility of specific health effects, international organizations, including the World Health Organization, recommend ongoing research from the scientific and

regulatory communities. The BioInitiative Project (2007, revised 2012), which was produced by an international non-governmental collaborative, included epidemiological and experimental evidence, postulated biological mechanisms by which RF might cause a variety of health effects, and proposed standards for its use, far more stringent than those which Canada, among many jurisdictions, applies. In 2011, the International Agency for Research on Cancer (IARC), following extensive review of research into cancer and RF, classified RF as a *possible carcinogen*.

Somewhat different from other reviews, the toolkit incorporates sections on medical and occupational uses of RF and how they inform risk to the general public, and on measures to limit exposure.

We realize that there will continue to be divergent views of the effects of RF. And we hope that scientists from across Canada can join us in contributing their knowledge and understanding to future integrative work in this enormous field.

Tom Kosatsky, MD

Medical Director, Environmental Health Services, BCCDC

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