Fact Sheet N184

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ELECTROMAGNETIC FIELDS AND PUBLIC HEALTH

PUBLIC PERCEPTION OF EMF RISKS

Technological progress in the broadest sense of the word has always been associated with various hazards and risks, both perceived and real. The industrial, commercial and household application of electromagnetic fields (EMF) is no exception.

Throughout the world, the general public is concerned that exposure to EMF from such sources as high voltage power lines, radars, mobile telephones and their base stations could lead to adverse health consequences, especially in children. As a result, the construction of new power lines and mobile telephone networks has met with considerable opposition in some countries.

In response to these public concerns shared by many governments, the World Health Organization (WHO) has established the International EMF Project to evaluate the biological effects and assess possible health risks from EMF exposure. Over 40 countries and 6 international organizations are currently involved in the Project.

Recent history has shown that lack of knowledge about health consequences of technological advances may not be the sole reason for social opposition to innovations. Disregard for differences in risk perception that are not adequately reflected in communications among scientists, governments, industry and the public, is also to blame. It is for this reason that risk perception and risk communication in relation to EMF are also covered by the International EMF Project.

Health Hazard and Risk: In trying to understand people's perception of risk, it is important to distinguish between a health hazard and a health risk. A ***hazard*** can be an object or a set of circumstances that can potentially harm a person's health. ***Risk*** is the likelihood (or probability) that a person will be harmed by a particular hazard.

- Every activity you can think of has an associated risk. Travelling may result in a car accident, or a plane or train crash. Staying at home may not protect you from an earthquake. Living in general is associated with many risks. There is **no such thing as a zero risk**.
- A car is a potential health hazard. Driving a car is a risk. The higher the speed, the more risky is the driving.
- The same is true for EMF-emitting sources. Under certain circumstances, EMF can be potentially hazardous, and the risk to a person's health depends on the level of exposure.

Perception of risk: A number of factors influence a person's decision to take a risk or reject it. People usually perceive risks as negligible, acceptable, tolerable, or unacceptable, and compare them with the benefits, which should outweigh the risk by a significant margin. These perceptions can **depend on people's age, sex, cultural and educational backgrounds**.

- Many young people, for example, find the risk of sky diving as acceptable. Many older people do not since they perceive it as too dangerous and, therefore, unacceptable.

The **nature of the risk** can lead to different perceptions. Surveys have found that the following pairs of characteristics of a situation generally affect risk perception. The first member of the pair tends to increase while the second one decreases the magnitude of the perceived risk:

- ***Involuntary vs. voluntary exposure.*** This is an important factor in risk perception, especially for EMF-emitting sources. People who do not use mobile telephones perceive the risk as **high** from the relatively low radio-frequency (RF) fields emitted from mobile telephone base stations. However, mobile telephone users generally perceive as **low** the risk from the much more intense RF fields from their voluntarily-chosen handsets.
- ***Lack of personal control vs. feeling of control over a situation.*** If people do not have any say about installation of power lines and mobile telephone base stations, especially near their homes, schools or play areas, they tend to perceive the risk from such EMF facilities as being high.
- ***Familiar vs. unfamiliar.*** Familiarity with the situation, or a feeling of understanding of the technology, helps reduce the level of the perceived risk. The perceived risk increases when the situation or technology, such as the EMF technology, is new, unfamiliar, or hard-to-comprehend. Perception about the level of risk can be significantly increased if there is an incomplete scientific understanding about potential health effects from a particular situation or technology.
- ***Dread vs. not dreaded.*** Some diseases and health conditions, such as cancer, severe and lingering pain and disability, are more feared than others. Thus, even a small possibility of cancer, especially in children, from EMF exposure receives significant public attention.
- ***Unfairness vs. fairness.*** If people are exposed to RF fields from mobile telephone base stations, but do not have a mobile telephone, or if they are exposed to the electric and magnetic fields from a high voltage transmission line that does not provide power to their community, they consider it unfair and are less likely to accept any associated risk.

In the case of people who do not own a mobile telephone, for example, exposure to RF fields from mobile telephone base stations may be perceived as a high risk for the following reasons:

- People are faced with an **involuntary** exposure to RF fields;
- It is **unfair** because the installation of these base stations exposes the whole community to RF fields while only the few mobile telephone users benefit;
- There is a **lack of control** over expansion of such networks into communities;
- Mobile telephone technology is **unfamiliar** and incomprehensible to most people;
- There is **insufficient scientific information** to precisely assess health risks; and
- There is a likelihood that this technology could cause a **dreaded** disease such as cancer.

Communities feel they have a right to know what is proposed and planned with respect to the construction of EMF facilities that might affect their health. They want to have some control and be part of the decision-making process.

Unless an effective system of public information and communications among scientists, governments, the industry and the public is established, new EMF technologies will be mistrusted and feared.

The development of EMF technologies should be matched by appropriate and coordinated research into their potential consequences for health. This is one of the most important objectives of the International EMF Project established by WHO.