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Zebras or Horses with Stripes: Applying the Precautionary Principle to excess risks in a kibbutz with Environmental Exposures to RF-MW (multiple frequencies) :

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Background and Objectives: We investigated exposures and risks for cancer in response to a concern over a suspect cancer cluster in a kibbutz adjacent to a large field that contained many antennae at radio, TV, and other frequencies. From the 1970's onward, there was a steady increase in the number and strengths of the transmissions. Our objectives were (1) to define exposures and risks within the kibbutz and (2) to determine the case for exposure reduction. There were suspicions of a similar cluster in a neighboring village, also adjacent to the antennae.

Methods: We carried out assessment of exposures (field strengths and spectral analyses) in the kibbutz in areas closest to the antennae and more distally. Later, additional information on exposures came to us on varied exposure sources. Information on case ascertainment and diagnosis was based on direct information from the kibbutz physician. O/E (adjusted for age and sex) over a 11 year period (1993-2004) were determined by summing expected cases at each age and gender for 5-year subgroups in the total population (n=1031) and subgroups <55 (n=733) and > 55 (n=298) for major cancer categories based on comparisons with data from the Israel Cancer Registry.

Results: Most of the younger families lived in the northern section of the kibbutz, nearest to the antennae, where exposures were highest at 2.0 meters above ground length (21 v/m). Lower exposures (1.4-12 v/m) were seen at greater distances. There were 58 cases of cancer (28 deceased), (O/E 1.03; p<.85) in the entire kibbutz, and 19 (O/E=1.77; p<01) in all those <age 55 and 39 (O/E=.85) in all those > 55. Most of the excess risk in those <55 came from H-L tumors (n=7; O/E 5.7; p<.001). The contributory role of other exposures in some cases was probably non-trivial.

Conclusions: The findings of a temporal increase in risk associated with high exposures and a gradient of increased risk specifically in the age group located nearest to the antennae suggested, but did not definitively prove, a possible cause-effect relationship to RF-MW from the antennae, even if there were other possible candidate exposures for some of the cases. But the high exposures themselves, even if risks were not increased, state the case for action for a precautionary strategy to remove exposures already produced. Taken together with prior knowledge from experimental studies on the effects of RF-MW on DNA, occupational studies, other community observational studies, and more recent studies on laterality of increased cancer risks in cell phone users, the case became compelling for applying a precautionary strategy and removing the exposures. At the time of writing, there was progress towards achieving this goal. This case was based on the premise that the burden of proof rested on those denying the possibility of a health risk.

