

Community attitudes to agrochemicals

Graeme O'Neill, Science Ink, 2 Banool Road, Selby, Victoria 3159, Australia.

It is common knowledge in the general community that herbicides and pesticides cause cancer, birth defects and other hazards to human health, even in trace quantities. It is also well known that organically grown fruit, vegetables and meat are safer to eat than produce grown with the aid of agrochemicals, including synthetic fertilizers.

Common knowledge does not necessarily reflect scientific knowledge, and the weight of scientific evidence argues against both these community perceptions. How do scientific myths or partial truths become received wisdom?

The explanation lies in the way that the mass media shape community opinion, the media's own 'culture' and its traditional uneasiness when dealing with complex scientific issues, and the skilful manner in which environmental and community health activists exploit these vulnerabilities in advancing their claims – claims that tend to be rooted in ideology but reinforced by highly selective use of science.

It will always be easier for the average person to believe that agrochemicals are a serious risk to their health, than to attempt to comprehend the complex scientific arguments that might allay, or at least diminish, such concerns. Perhaps more pertinent, when an individual is confronted with conflicting information, simple prudence dictates that it is always safer to adopt a conservative attitude that will minimize their exposure to risk, whether that risk be real or imagined.

Journalists are as susceptible to such perceptions as any member of the community. The overwhelming majority of journalists working in the Australian media have no tertiary qualifications in science or medicine. Indeed, their comprehension of science and science-related issues may actually be poorer than that of the general community because the modern profession is so dominated by arts, business, economics and law graduates. Confronted by complex scientific issues, the media will tend to reflect the 'safe' approach, which is based in received wisdom rather than state-of-the-art scientific knowledge. The most popular media—tabloid newspapers, television and commercial radio—generally give science a wide berth.

The editorial hierarchies of the mass media are self-perpetuating because they clone in their own image. In a world where specialization is the means to power, it is human nature that an editor, who comes

from a business or arts background, will tend to appoint senior staff who reflect his own perceptions of what makes 'news'. The status quo means that journalists with experience in reporting science rarely reach a position where they might be able to influence their organization's perception and coverage of science news and issues.

Science's own inadequacies and scientists' aversion to the mass media, and the way in which the modern media operate, conspire to limit science's opportunities to transmit accurate information to the community. This is especially true with the most popular mass medium, television. Television news is a hostile environment for science because a brief, emotive slogan on a placard or T-shirt, for example "Chemicals are killing our children", could not be refuted, even by the most articulate scientist in a 20-second sound grab. Commercial TV's current affairs programs are no less hostile. The quest for 'good television' and high ratings drives television current affairs programs to seek out those who will advance the most polarized viewpoints. The voice of moderation is rarely heard, except on ABC television, which caters for a minority audience.

Irrespective of the medium, the complexity of most scientific information weighs heavily against the scientist in any public debate. The organic food industry, for example, is founded on a myth that most produce is laced with man-made chemical residues that are potentially carcinogenic or toxic. Professor Bruce Ames has argued convincingly that cancer data derived from mega-dosing laboratory rodents is unreliable, and that naturally occurring plant compounds are equally carcinogenic when subjected to the same methodology. But when Ames' complex argument is ranged against the community's understanding of the mechanisms of mutation and cancer, and its misconception that 'natural' chemicals are somehow fundamentally different from man-made chemicals, there is little chance of changing the received wisdom. It is intuitively obvious that 'natural' is safer.

The Nufarm incident in Melbourne, in which the environmental activist group Greenpeace charged that the agrochemical manufacturer Nufarm was discharging dioxins and furans into the environment, demonstrates how susceptible the media are to manipulation when confronted with potentially sensational information on community health and environmental

issues. It also demonstrated that such sensationalist episodes can have a heavy cost – even though a formal scientific inquiry found that dioxins and furans discharged into the waste stream posed no hazard to community health or the environment, the episode cost Nufarm at least \$5 million, and damaged the company's reputation.

Trends in the mass media are ominous for science. There is increasing emphasis on 'personality' journalism, where ever-larger sections of newspapers and airtime are given over to reporting the trivial and ephemeral affairs of local and international celebrities, because such 'news' sells newspapers, or rates highly. The problem is that such coverage is provided at the expense of in-depth reporting and analysis of serious news and issues. The trend is of particular concern to science, a relatively anonymous profession that is not renowned for producing famous or outrageous personalities.

There may be no easy simple solution to the problems outlined here, except for science to make all possible efforts to involve itself in public debate on controversial issues – an area in which it has traditionally showed great reticence. Bad science must not be allowed to stand unchallenged, and individual scientists, as well as professional organizations within science, have a responsibility—even a duty—to involve themselves in public debate. Science should also continue to target its information to those members or sectors of the community who have the greatest potential to influence community opinion.