

Neither Black Nor White, But Very Gray

Undoubtedly, every reader of this *Journal* has heard the observation stated that "no drug is completely safe." Indeed, most of our readers have probably articulated this point themselves on one or more occasion.

Generally, the need to bring out this fact comes up in discussions with the general public. The average lay person does not have the training, background, or sophistication to understand or grasp the concept that there are no real absolutes in the case of either safety or toxicity.

Although we might cringe a bit at the simplification involved, this writer once heard a pharmacologist try to explain this point to a lay audience; he stated that "chemotherapeutic agents are virtually nothing more than selective poisons that are administered to humans in carefully controlled quantities."

In this, the pharmacologist was simply paraphrasing Paracelsus (1493–1541) who is quoted as having written: "All substances are poisons; there is none which is not a poison. The right dose differentiates a poison and a remedy."

Virtually every substance known has some element of hazard associated with it, depending upon the form of exposure, duration of exposure, concentration of the substance, total intake involved, and similar considerations. And the more active or effective the substance is for some desired purpose, usually the more that its untoward effects or negative properties increase as well.

All of this gives rise to risk-benefit analysis or evaluations. Scientists and health care practitioners deal with these concepts countless times each day, and the concepts therefore should be almost second nature to them.

But on rare occasions, not only individual scientists but even relatively large groups of scientifically or medically trained people will react or overreact with apparently the same lack of understanding and judgment that we associate with the lay public.

About twenty years ago, Rachel Carson published her classic work titled "Silent Spring." This book had as its central theme a thesis that our indiscriminate use of pesticides was having a totally disastrous side effect on all animal life and particularly on the bird population.

Granted, she was guilty of some over-exaggeration, and she wrote with the high intensity of a typical crusader. But there also was a very significant element of truth in her position—truth that was later brought out by the DDT problems of the 1960's and infamous Kepone revelations of the mid-1970's.

Unfortunately, however, the scientific community as a whole did not assess her contentions in a calm, cool, and deliberate manner. Instead, scientists—and, in particular, chemists active in the American Chemical Society—scoffed at Carson's contentions and subjected her personally to the severest degree of rid-

icule. It wasn't until years later that the error of these unfortunate actions, which were prompted out of a misguided or excessive sense of loyalty to the chemical industry, was generally acknowledged.

Over the years, there have been other regrettable instances of knee-jerk reactions by scientists and scientifically trained people: groups that should really know better than to allow themselves to act either precipitously or without appropriate balance.

One of the most recent of such incidents occurred this past June when the House of Delegates of the American Medical Association, by voice vote, approved the adoption of "an active public information campaign to prevent irrational reaction and unjustified public fright and to prevent the dissemination of possibly erroneous information" about the health hazards of dioxin. The language included with the resolution also spoke of "hysterical malreporting" and "a witch hunt" of dioxin.

Certainly, the facts presently known about the toxicity and hazards of dioxin do not justify the sensationalist press treatment and some of the extreme actions being recommended or taken with respect to controlling potential exposure to the agent. But, on the other hand, sufficient information is known to justify significant caution in dealing with it.

The regrettable aspect of the AMA policy action was to deal with the exaggerations by overreacting in the opposite direction. And the eager press and broadcast media were quick to publicize the action with stories carrying titles such as "AMA Votes to Fight Dioxin 'Witch Hunt.'" "

Fortunately, cooler heads quickly prevailed at the AMA, and efforts were promptly taken to put their position in better public perspective—but, sadly, AMA credibility had already been damaged by the initial press reports.

Without citing additional examples, let it suffice to say that other areas of science, including the pharmaceutical sciences, have also had their share of such moments of embarrassment.

Hopefully, we will all learn from these experiences that while others may adopt positions that we see as extremist, scientists must avoid the temptation to take opposite positions that are equally extreme. Rather, the correct position—which is rarely, if ever, either black or white—must be sought and identified.

As one wag put it to us recently, "Scientists must keep their heads while all about them are losing theirs!"

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