Fact or Fiction?

Jack W. Dini
1537 Desoto Way
Livermore, CA 94550
E-mail: jdini@comcast.net

Children and Risks

What are the world's biggest killers of children and young adults? To answer this you have to first ask—in what part of the world? Children in undeveloped countries die in much larger numbers and of much different causes than those in the developed world. However, no matter where you look, the causes of children's deaths aren't Alar on apples, electromagnetic fields, the ozone hole, dioxin, or any of the myriad of alarmist items you read about in the daily papers or hear on television. According to the World Health Organization, infectious diseases are the world's biggest killer of children and young adults and ninety percent of infectious disease deaths are caused by only six diseases: tuberculosis, malaria, AIDS, diarrhea, pneumonia and measles.[1] Except for AIDS, none of these pose a threat in developed countries.

Estimated Approximate Annual Mortality Risks For Children Under Age 10 (Number of deaths per million children)*

Motor vehicles	46
Drowning	20
Suffocation	17
Fire	16
Guns	5
Poisoning	2
Bicycles	2
Medical care	2

* Data from National Center for Injury Prevention and Control, 1998 and US Bureau of Census, 1998. See reference 3.

Poor Countries at Highest Risk

Geoffrey Cowley reports: "Worldwide, nearly 11 million children perish before their 5th birthdays every year. They don't die because science has yet to find treatments for their conditions. Most die for the lack of clean water, adequate nutrition and the most basic medical necessities—skilled birth attendants, 50 cent vaccines, antibiotics that were developed eight decades ago. In fact 90 percent of the world's childhood deaths—roughly 9.7 million a year—now occur in 42 developing countries. And 99 percent of the victims are poor."[2]

By contrast, in developed countries accidents are by far the most important single cause of death in childhood and this includes the U.S. as shown in the accompanying table. Note that all of the causes of death listed in the table exceed the magical one in one million that we so often hear about in regulations covering chemicals, pesticides, etc.

Rather than hear about ways to reduce causes of death listed in the table, we more often hear about trace levels of supposedly cancerous chemicals along with claims that children are more at risk from these materials than adults. Almost every major environmental and health organization cited children's sensitivity to chemicals as a major research and advocacy priority for the year 2000.[4] Note that these groups said nothing about accidents and other major causes of children's deaths. A few specific chemicals such as lead, PCBs, and pesticides have been singled out in the past. For lead, there is a recognized physiological basis for children's increased susceptibility. However, this has not be proven for PCBs, pesticides and phthalates in spite of all the negative press about these items.[5]

Not Because of Environmental Chemicals

Former U.S. Surgeon General C. Everett Koop says a recent book, *Are Children More Vulnerable to Environmental Chemicals?,* published by the American Council on Science and Health (ACSH) documents that there is no scientific evidence to validate these claims.[6] Joyce Howard Price says it bothers Koop that some folks are advocating restrictive and costly regulatory policies when the science indicates they are unnecessary. Koop also adds: "The book further exposes a pattern in which activists manipulate parents' very legitimate and appropriate concerns for their children's health, in an effort to promote legislation, litigation, and regulation that are not supported by the science."[6]

Todd Seavey reports: "[When] EPA contemplates enshrining the rule that children are to be considered 10 times more vulnerable to chemicals in the environment than adults, that's a purely regulatory decision, not the scientific truth about chemicals. In fact, it's bogus on two different levels.

First, it's unlikely that the tiny amounts of synthetic chemicals we typically encounter are dangerous—not even the ones that can be detected in the human body. Second, it is not necessarily the case that children are especially vulnerable to chemical exposure. They may even be more resistant in some cases, one of many surprising, but scientifically well-supported points made in *Are Children More Vulnerable to Environmental Chemicals?* So the rather arbitrary assumption that children are at 10 times the risk that adults are (which may be zero or close to it) from chemicals is more a regulatory convention than a scientific conclusion."[7]

Bonner Cohen adds: "The ACSH book asks one fundamental question: Are young

children, infants, and fetuses at an increased health risk from environmental chemicals, either because they have a heightened susceptibility to such compounds or because they experience higher relative exposures to environmental chemicals than do adults? The exhaustive evaluation of the data carried out by the book's authors concludes there is no scientific evidence to support the claim that children are necessarily more vulnerable to all environmental chemicals." [8]

Other publications support these conclusions. A recent study by Reason Public Policy Institute finds that children generally are not more susceptible to chemical toxicity than adults, and that where differences do occur they are small. The report, *Protecting the Children: Risk Assessment, Risk Management, and Children's Environmental Health* by Gail Charnley[9] also concludes that there is little evidence that environmental exposures play a significant role in childhood disease.[10]

Despite expenditures of $100 to $140 billion each year on environmental health protections and compliances, government agencies still have very little idea which environmental exposures actually pose risks to children. Thus, *Protecting the Children* recommends focusing future research on known threats to children's health and assessing our ability to reduce those risks in a meaningful way.[10]

Helen Roberts and her co-authors of *Children At Risk* report that almost half of all deaths among children aged 1–19 in the United Kingdom in 1990 were caused by injury and poisoning. They note: "Given the sheer extent of the child accident problem it is at best curious—at worst scandalous—that accident risks have not given rise to the same public concern that other aspects of children's well-being have elicited. Why is it that the major cause of childhood death in the UK does not attract more attention from scholars, policy-makers and the public?"[11] Obviously, the same question could be asked about actions in the U.S.

NEWSWEEK in a special report on children noted that parents seem more worried about rare but well publicized diseases, such as Lyme disease, West Nile virus and SARS, but they rarely ask about car seats or smoke detectors. "They outfit their kids with GPS locators and child identification kits, but not with properly fitting bicycle helmets. They know details about crimes in other states, but seem not to notice their own children's weight problems."[12] And while on the subject of weight, public health officials have been stressing that childhood obesity is definitely life threatening and difficult to treat. Fifteen percent of children—9 million kids—are seriously overweight, a rate that has tripled since 1970. These kids are on the fast track for adult cripplers like heart disease, stroke and diabetes.[13]

Summary

Concern over child susceptibility is increasing at a time when ecosystem health is improving and human exposure to environmental chemicals is declining.[14] Environmental chemicals are only one type of hazard that children and infants may face and they often pale in comparison to other children's health risks, such as automobile and bicycle accidents, sports injuries, drowning, and accidental poisoning. Understanding and giving proper attention to real children's health risks, versus those risks that are hyped into fears, is critical so that environmental chemical risks can be seen in the proper perspective and children's health can be maintained.[15]

References

1. Michele Morrone and Timothy W. Lohner, *Sound Science, Junk Policy*, (Westport, Connecticut, Auburn House, 2002), 140.
2. Geoffrey Cowley, "Where Living Is Lethal," *NEWSWEEK*, (September 22, 2003), 78.
3. *Are Children More Vulnerable to Environmental Chemicals*?, Daland R. Juberg, Editor, (New York, American Council on Science and Health, 2003), 104.
4. Charles W. Schmidt, "Environmental Health 2000," *Environmental Health Perspectives*, **106**, (December 1998), A600.
5. *Are Children More Vulnerable to Environmental Chemicals?,* 5.
6. Joyce Howard Price, "Koop backs book minimizing danger of toxins to children," *The Washington Times*, (February 10, 2003).
7. Todd Seavey, "Regulation is Not a Science: EPA and ACSH, *Health Facts and Fears.com*, (April 15, 2003).
8. Bonner R. Cohen, "New Report Decries Eco Scare Tactics," *Environment & Climate News*, **6**, 1, (May 2003).
9. Gail Charnley, *Protecting the Children: Risk Assessment, Risk Management, and Children's Environmental Health*, Reason Public Policy Institute, Policy Study, June 2001.
10. Chris Mitchell, *Children are Not More Sensitive to Chemical Risks than Adults*, Reason Public Policy Institute, September 5, 2001.
11. Helen Roberts, Susan J. Smith and Carol Bryce, *Children At Risk?*, (Philadelphia, Open University Press, 1995), 7.
12. Alan Woolf and Leann Lesperance, "What Should We Worry About?," *NEWSWEEK*, (September 22, 2003), 72.
13. Peg Tyre and Julie Scelfo, "Helping Kids Get Fit", *NEWSWEEK*, (September 22, 2003), 60.
14. *Are Children More Vulnerable to Environmental Chemicals?*, 4
15. *Are Children More Vulnerable to Environmental Chemicals?*, 6.

Finisher's Think Tank

(Continued from page 25)

This in turn reduces corrosion protection and service life of finished parts. Desired metal distribution in the deposit will also be affected. Throw in the non-cyanide bath will be reduced. Elevated temperature in the cyanide zinc bath will hasten the thermal oxidation of cyanide to carbonate. This will gradually reduce plating efficiency.

Chromates

The various colors typically operate in a range of 70–90°F (21–32°C). As the bath temperature increases, the chromate film that forms becomes thicker and less adherent. Immersion time can be decreased, if this is practical, to compensate for elevated operating chromate temperatures. Trivalent chromates are another possible alternative. The chromating reaction for trivalent chromates is usually slower compared to the hexavalent. Some trivalent chromates require higher temperatures, or tolerate them better than the hexavalent chromates.

Zincates

Temperature range: 65–85°F (18–29°C). Conventional zincates, based on zinc oxide and caustic soda, are the oldest technology of the available types. Conventional alloy zincates consist of zinc and iron. Modified alloy zincates are composed of four metals: zinc, copper, iron, and nickel. Each system is affected by increasing temperature. The conventional zincates and alloys are more sensitive to increasing temperature. The rate of zincate formation increases as the temperature does. At a certain film thickness, the zincate becomes spongy, porous, and less adherent to the aluminum surface. This results in poor quality plating. The parts may have to be scrapped or stripped and polished before rework. Modified alloy zincates form a matrix of the four metals in the film. The action of copper and nickel is to control film thickness, with better tolerance to higher zincate bath temperatures. But, there is no substitution for maintaining the correct temperature range.

The months of June, July, and August typically contribute to the unwelcome heating effect that will keep baths warm and warmer. Sufficient temperature control and adequate cooling of temperature sensitive baths not only becomes important, but downright critical.

Beat the heat—keep it cool! Thanks to Bob Lynch of Atotech USA for his helpful comments.