Between 1980 and 1992 in the U.S., the death rate due to infectious diseases as the underlying cause of death increased 58%, from 4.1 to 6.5 deaths per 100,000 population, according to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. The increase was larger among males (69%) than among females (44%). The greatest increase occurred among people between the ages of 25 and 44; in this age group, the death rate from infectious diseases rose from six to 38 deaths per 100,000 people, more than a six-fold increase. Among people over the age of 65, the death rate from infections increased from 271 per 100,000 to 338 per 100,000, a 25% increase during the period. Among children younger than 5, the death rate from infectious diseases declined during the 12-year period. Overall, during the period, age-adjusted mortality from infectious diseases increased 39% in the U.S.

The death rate from infectious diseases not related to AIDS increased substantially during the period. For example, the death rate for respiratory infections increased 20%, from 25 to 30 deaths per 100,000, and the rate of death from septicemia (a blood infection) increased 83%, from 4.2 to 7.7 per 100,000.

Among the leading causes of death in 1980, infectious diseases ranked fifth in the U.S., based on underlying-cause-of-death data. (The big four causes of death in 1980 were heart disease, cancers, strokes, and accidents.) By 1992, infectious diseases ranked third, after cardiovascular disease and cancers.

This analysis has underestimated the contribution of infectious agents to the U.S. death rate because it counted only deaths in which infection was clearly the "underlying cause." Infections contributed to -- but were not the "underlying cause" of -- many more deaths than those counted in this analysis, the authors of the study say.

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The authors of the study cannot explain all of the increases that they observed. They think some of the increases may have been caused by improper food handling, and by the appearance of microbes that are resistant to antibiotics.

The development of microbes resistant to antibiotics is now recognized as a large and growing public health problem. (See REHW #402.)

Medical researchers concerned about increasing rates of infectious disease are recommending wider use of the vaccine that is now available for pneumonia caused by the bacterium, STREPTOCOCCUS PNEUMONIAE.

They are also recommending that physicians prescribe antibiotics prudently. (Unnecessary use of antibiotics is a major cause of the development of antibiotic-resistant strains of bacteria.) Furthermore, they urge people with a case of the sniffles to stop demanding antibiotics from their doctor. The common cold is caused by viruses, not bacteria, and antibiotics are not effective against viruses. Use of antibiotics to treat the common cold merely increases the number of antibiotic-resistant bacteria in the world. Many physicians report that they prescribe antibiotics for colds, even though they know such a remedy will not be effective, because patients demand it.

In addition to antibiotic-resistant microbes, another possible contributor to the rising death rate from infectious diseases is damage to the human immune system. Immune system damage is known to occur as a result of our constant exposure to combinations of exotic chemicals. For example, the National Academy of Sciences acknowledged in a 1992 study, "In the general population, increasing numbers of people suffer from disorders of the immune system, such as allergies, asthma, and AIDS. The incidence of asthma has increased 58% since 1970, and it is well known that nitrogen dioxide and ozone, common air pollutants, interact with allergens to increase the frequency and severity of asthma attacks."[3]

The immune system is a complex set of specialized cells and organs that defends the body against attack by invaders. When it functions properly, the immune system fights off diseases caused by bacteria, viruses, fungi, parasites, and cancer cells. "When it malfunctions, however, it can unleash a torrent of diseases, from allergy to arthritis to cancer to AIDS," according to the federal National Institutes of Health (NIH).[4] When it malfunctions, the immune system can fail to protect against infectious diseases.

In 1996, a study of pesticides and the immune system, published by the World Resources Institute (WRI), examined a growing body of literature from around the world, showing that many common pesticides degrade the immune systems of laboratory animals, wildlife, and humans.[5]

WRI examined studies of all major classes of pesticides -- organochlorines such as DDT; organophosphates such as malathion, and carbamates such as aldicarb.

Though most of the studies were of laboratory animals, WRI reviewed studies of wildlife as well.

In a controlled experiment, Dutch virologist Albert D.M.E. Osterhaus of Erasmus University in Rotterdam fed two groups of harbor seals fish from different sources.[6] One group of seals received relatively clean fish from the North Atlantic and the other group received fish from the industrially-polluted Baltic sea. The Baltic fish contained 10 times as much organochlorine pollution (for example, DDT and PCBs) as the Atlantic fish. Osterhaus emphasized that both kinds of fish were taken from catches destined for (and considered legally fit for) human consumption.

For 2 years, Osterhaus sampled blood from the seals every six to nine weeks and made various measurements of immune system function. Almost immediately after the experiment began, vitamin A levels dropped 20 to 40 percent in the blood of seals fed fish from the Baltic and remained low throughout the 2-year experiment. Vitamin A is associated with disease resistance; lower vitamin A levels in the blood correspond to greater vulnerability to disease.

Seals fed Baltic fish showed another important change: the level of NK cells in the blood remained 20 to 50 percent below normal throughout the study. NK cells are "natural killer" cells that attack foreign bodies in the blood, thus providing important immune protection.

Other key components of the immune system were compromised in the Baltic-fed seals. In a healthy immune system, B cells produce antibodies and T cells orchestrate the immune response to foreign invaders. In the Baltic-fed seals, the T-cell response to a standard set of antigens dropped 25 to 60 percent, compared to the Atlantic-fed seals.

"I was surprised to see significant immune changes in animals that were fed on a normal diet using fish fit for human consumption," Osterhaus says.[7]

WRI commissioned scientists in Eastern Europe to translate technical studies of chemical effects on the human immune system. Lyudmila Kovtyukh of the Academy of Sciences of Kishinev, Moldova (a republic between Romania and the Ukraine) reported heavy use of pesticides around Kishinev. She also reported that children living in the pesticide-contaminated areas had unusually high incidence of acute respiratory infections, including pneumonia, ear infections, tuberculosis, and dental caries. Adults in the area...
also had unusually high rates of infections. Scientists there measured diminished T cell populations, and they were able to show a dose-response relationship with pesticide exposure: the greater the pesticide exposure, the greater the loss of T cells.[8]

An ongoing series of studies of Inuit natives in northern Quebec, Canada, has shown that organochlorine contamination of the food chain (including many pesticides) leads to a buildup of these toxic substances in breast-fed Inuit babies.[9] Inuit infants and children suffer from high incidence of infectious diseases, specifically ear infections (chronic otitis),[10] and meningitis.[11] In some cases, these children's immune systems are so damaged that they cannot be vaccinated against disease because their immune systems cannot produce the needed antibodies.

After the discovery of sulfa drugs in the 1930s, and other antibiotics in the 1940s and '50s, many public health specialists assumed that infectious diseases were readily controllable, and were perhaps even a thing of the past. This gave rise to an emphasis on heart disease and cancer. Now, however, we know that this perspective was mistaken. Infectious diseases are making a comeback worldwide. Recent evidence indicates that the dramatic failure of our regulatory system for controlling toxic chemicals is contributing to the re-emergence of this class of diseases, even in parts of the globe, such as the Arctic, where use of toxic chemicals has been minimal.

In 1996 the American Medical Association acknowledged that worldwide pollution, leading to global warming, is likely to increase the incidence of infectious diseases in many human communities.[12] The links between pollution and human disease have become impossible to deny.

--Peter Montague (National Writers Union, UAW Local 1981/AFL-CIO)


Descriptor terms: disease statistics; infectious diseases; american medical association; aids; bacteria; viruses; immune system; mortality statistics; cancer; heart disease; accidents; stroke; sepsis; antibiotic resistance; resistance; pneumonia; world resources institute; pesticides; wildlife; seals; atlantic ocean; baltic sea; ddt; pcbs; estern europe; moldava; inuit; quebec; canada; otitis; ear infections; meningitis; global warming; children;