A history of scientific alarms

Dr Kesten Green lists the 20 most unscientific scares.

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There is a long and dismal history of alarming forecasts that were literally too bad to be true. But many people believed these predictions that human actions would harm the environment and thereby cause disaster for people. As early as 1798, Thomas Malthus predicted that the human population would grow beyond the ability of the environment to support it. Before him, Socrates bemoaned the loss of forests around Athens. Arguably the most harmful alarm was about DDT, the banning of which has cost many millions of lives.

The alarms were based on forecasts, but not ones from proper scientific forecasting methods. The alarmists make their alarming forecasts in three broad ways: by using unrealistic mathematical models, such as Malthus'; by extrapolating the genuine effect of a large dose to a near-zero dose; and by hypothesising that a weak effect exists and extrapolating that it will become important over time or over a large population. The third of these unscientific forecasting methods is the one most favoured by alarmists.

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Because the alarmists fail to use proper forecasting methods, there is no reason to expect their alarming forecasts to be accurate, except by chance. The unscientific methods that alarmists use are biased towards making alarming forecasts. Most of the alarmists' forecasts were categorically wrong. The rest were wrong in degree: the effects the alarmists were concerned about turned out to be too trivial to cause problems.

The media are culpable in promulgating these false alarms. Though regrettable, the weakness is understandable: alarms are news. Rational sceptical responses require time and effort to assemble, and don't have the same emotional urgency. We have to follow closely to ever learn that an alarm has been shown to be false, and most of us are too busy to do that.

Alarmists are often rewarded for their efforts. They typically ask government to 'do something'. As a result, laws are often passed and regulations implemented that decrease the freedom of people to use their own judgement and to make their own decisions, in ways that the alarmists prefer. These policies inevitably impose financial costs and have unforeseen consequences.

Moreover, government research funds and recognition tends to flow to alarmists. Paul Ehrlich, author of *The Population Bomb*, is evidence that a record of raising false alarms is no obstacle to obtaining awards, and may help. Yet there is no evidence that paternalistic policies implemented in response to alarms save us or make us better off.

Here then, in brief, is a Top 20 of environmentalist alarms and their outcomes. Please, let's learn from them by not being so gullible! R

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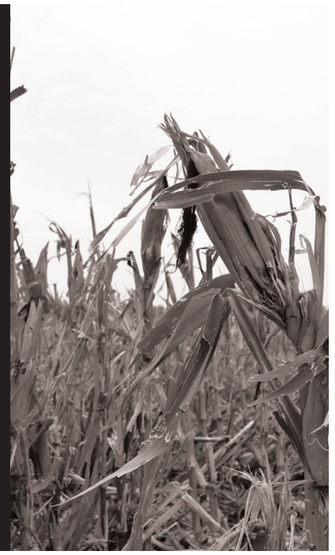
20 environmentalist alarms

1 POPULATION GROWTH AND FAMINE, 1798

Based on Benjamin Franklin's observation that animals and plants reproduce until they exhaust resources then starve and die, Malthus extrapolated that humans would share this fate as a result of geometric population growth and linear resources growth. He later realised that foresight and innovation prevent this fate in humans.



2 TIMBER FAMINE ECONOMIC THREAT, 1865

Forecasts that we will run out of wood for construction and paper occur from time to time around the world. Despite the alarms, the world's forested area has increased since WWII, as has wood production. Planting and efficiency have increased in response to demand and competition.

3 SOIL EROSION AGRICULTURAL PRODUCTION THREAT, 1934

Despite periodic alarms from lobbyists and politicians over soil being washed and blown away, there has been a net gain in soil on most US cropland, and erosion rates have been slowing. In Australia, too, soils have improved with fertilization and new plant species, and erosion has declined as land management practices have improved.

4 FLUORIDE IN DRINKING WATER HEALTH EFFECTS, 1945

Fluoride is poisonous in quantity, but occurs naturally in drinking water in low concentrations. One part-per-million reduces dental decay. Some scientists have warned of potential ill effects and some communities reject fluoridation of water supplies. Claims of ill effects at 1ppm are not supported.

5 DDT AND CANCER, 1962

In *Silent Spring*, Rachel Carson forecast that birds would die out and people would be afflicted by cancer due to increasing exposure to the insecticide DDT. There was no plausible biological mechanism identified and research failed to support the claims. DDT was nevertheless banned. Millions have died unnecessarily from malaria.

6 POPULATION GROWTH AND FAMINE (EHRLICH), 1968

Early Malthus reheated by butterfly biologist Paul Ehrlich, who also forecast global cooling and, later, global warming disasters. In *The Population Bomb*, Ehrlich wrote, 'The battle to feed humanity is over. In the 1970s, the world will undergo famines. Hundreds of millions of people are going to starve to death'.

7 GLOBAL COOLING, 1970

Temperatures had been declining since the end of WWII, and some scientists forecast an imminent ice age. Alarming forecasts have alternated between ice ages and the opposite several times since at least the Nineteenth Century. Media coverage of this most recent cooling alarm stopped after temperatures warmed again.

8 POPULATION GROWTH AND FAMINE (MEADOWS), 1972

Computer modelling sponsored by the Club of Rome predicted burgeoning population, exhausted resources, and famine. With minor and realistic changes in assumptions, however, the model would produce sanguine forecasts. The Club recanted the original forecasts in 1976.

9 INDUSTRIAL PRODUCTION, ACID RAIN AND FORESTS, 1974

Sulphur dioxide from burning coal can increase the acidity of rain. Scientists ascribed fish deaths and predicted harm to forests and people. The US National Acid Precipitation Assessment Program found little environmental damage and no harm to people. Acidity of rain varies naturally. The costly *Clean Air Act* is still in effect.

10 ELECTRICAL WIRING AND CANCER, ETC, 1979

A small epidemiological study reported an association between hypothesised exposure to electromagnetic fields and childhood leukaemia. In the US, regulations intended to reduce exposure cost $1 billion annually. Thousands of studies have failed to establish a link between actual exposure and any health effect.

11 CFCs, THE OZONE HOLE, AND SKIN CANCER ETC, 1985

Speculation that the Earth's ozone layer was being depleted by chlorine from chlorofluorocarbons and forecasts that skin cancer rates would increase led to an international ban. Knowledge about the relationships was and is poor. Chlorine from the sea is 400 times CFC peak production. Replacement refrigerants are dangerous.

12 LISTERIA IN CHEESE, 1985

Listeria monocytogenes occurs in soft cheeses, but most strains do not cause listeriosis. Listeriosis can be fatal for high-risk people such as young children. Detection is now easy resulting in listeria being more often identified in food and therefore more deaths being attributed to it than in the past, thus precipitating alarms.

13 RADON IN HOMES AND LUNG CANCER, 1985

The gas historically caused lung cancer in miners working in dusty uranium-rich mines. A small survey found elevated levels in some houses, and the US EPA estimated 8 million homes were affected and forecast up to 30,000 lung cancer deaths per annum. Proper studies have shown any effect is small, or nonexistent.

14 SALMONELLA IN EGGS, 1988

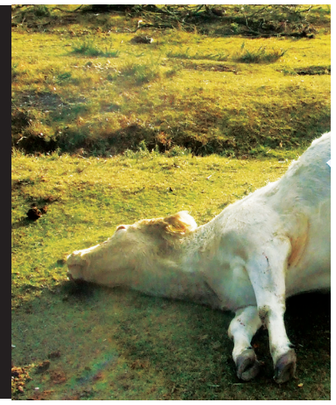
Careless investigations of food poisoning in Britain attributed some to eggs. A government minister asserted that 'most' egg production was infected with salmonella. Demand plummeted. Costly flock testing was imposed. There were calls to kill the entire laying flock—and one million birds were. Salmonella has likely never been present inside eggs.

15 ENVIRONMENTAL TOXINS AND BREAST CANCER,1990

Long Island breast cancer survivor and lobbyist Barbara Balaban and some scientists speculated, against our understanding of biological mechanisms, that toxins in the environment, such as DDE and PCBs, were causing breast cancer. Congress ordered studies that cost $30 million. They found no link.

16 MAD COW DISEASE (BSE), 1996

Speculation that a variant of Creutzfeldt-Jakob disease might be contracted from eating beef from cattle with BSE, and forecasts that the disease would kill 10 million people by 2010, led to the slaughter of 8 million cattle in Britain at a cost to the taxpayer of £3.5 billion. Suspected vCJD deaths never exceeded 28 per year and any link to BSE remains unconfirmed.



17 DIOXIN IN BELGIAN POULTRY, 1999

Dioxins occur naturally, as well as incidentally and deliberately from industry. Some are toxic. When breeder chickens became ill, the cause was traced to dioxin contaminated feed. Seven million chickens and 60,000 pigs were destroyed. But people were exposed to more dioxin by substituting fish for chicken in their diets.

18 MERCURY IN FISH'S EFFECT ON NERVOUS SYSTEM DEVELOPMENT, 2004

Extrapolating from insupportably low 'safe' levels, a US EPA employee predicted 630,000 babies born with potential brain damage each year. Women were warned to avoid fish. Mercury occurs naturally in the environment and most Japanese have higher than EPA 'safe' levels from eating a health-promoting high-fish diet.

19 MERCURY IN CHILDHOOD INOCULATIONS AND AUTISM, 2005

Robert F Kennedy, Jr claimed on CBS News that 'The science connecting brain damage with thimerosal is absolutely overwhelming'. Thimerosal is a vaccine preservative that contains mercury that the industry claims is safe. When it was eliminated, autism cases continued to climb. Researchers found no link.

20 MOBILE PHONE TOWERS AND CANCER, 2008

Periodically, community activists raise alarms that the towers will cause cancer and miscellaneous other health problems. The towers transmit and receive weak radiofrequency signals. The signals are centimetres-long wavelength non-ionizing radiation that, like heat and visible light, cannot damage DNA. Scientific studies have found no health effects.

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