

**The Hall of Shame: How Bad Science can cause Real Harm in Real Life**

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**Abstract:** There are no qualms in accepting the fact that – in the past – things were different from what they are now. Even though science transformed extensively from our personal laptops, tablets, and phones to behind-the-scenes technology, it is yet a continuing effort to **discover and increase human knowledge** and understanding. Science is ubiquitous and has made very rapid progress and completely transformed outwardly the manner of our living — allowing us to develop new technologies, **solve practical problems, and make informed decisions** — both individually and collectively. In its pursuit of excellence, it has led to pollution, environmental crisis, greater violence, sorrow, tension, new pathogenic diseases, chemical and biological war to name a few. On the one hand, Science (a system of acquiring knowledge **based on scientific method and research**) has been a boon to mankind and on the other hand, it has also proved to be a cause of great distress or annoyance.

**Keywords:** pharmacological effect; DDT; fertilizers; global warming; acid rain; Chronic Constipation.

"Although Nature needs thousands or **millions of years to create a new species**, man needs only a few dozen years to destroy one."

**: Victor Scheffer**

We humans, who began as a mineral and then emerged into plant life and into the animal state and then to being aggressive mortal beings who fought a survival struggle in caveman days, to get more food, territory or partner with whom to reproduce, now are glued to the TV set, marveling at the adventures of science and their dazzling array of **futuristic technology** from **teleportation to telekinesis**: rocket ships, fax machines, supercomputers, a worldwide communications network, gas-powered automobiles and high-speed elevated trains. The science has opened up an entirely new world for us. And our lives have become easier and more comfortable. With the help of science we have estimated about 8,000 **chemotherapeutic exogenous non-nutritive chemical substances** which when taken in the solid form by the mouth enter the digestive tract and there they are transformed into a solution and passed on to the liver where they are chemically altered and finally released into the blood stream. And through blood they reach the site of action and binds reversibly to the target cell surface receptors to produce their pharmacological effect. And after their **pharmacological effect** they slowly detaches from the **receptor**. And then they are sent to the liver. And there they are transformed into a more water soluble compound called **metabolite** and released from the body

through urine, sweat, saliva, and excretory products. However, the long term use of chemotherapeutic drugs for diseases like cancer, diabetes leads to side effects. And the **side effects** — including nausea, loss of hair, loss of strength, permanent organ damage to the heart, lung, liver, kidneys, or reproductive system etc. — are so severe that some patients rather die of disease than subjecting themselves to this torture.

And smallpox (an acute contagious disease caused by the **variola virus**, a member of the **orthopoxvirus family**) was a leading cause of death in **18th century**, and the inexorable spread of the disease reliably recorded the death rate of some hundred thousand people. And the death toll surpassed 5000 people a day. Yet **Edward Jenner, an English physician**, noticed something special occurring in his small village. People who were exposed to cowpox did not get smallpox when they were exposed to the disease. Concluding that cowpox could save people from smallpox, Edward purposely infected a young boy who lived in his village first with **cowpox, then with smallpox**. Fortunately, **Edward's hypothesis** worked well. He had successfully demonstrated the world's first vaccine and eradicated the disease. And vaccines which once saved humanity from the smallpox (which was a leading cause of death in 18th-century England), now have associated with the outbreaks of diseases like **pertussis** (whooping cough) which have begun showing up in the United States in the past forty years.

#### **TOP 5 DRUGS WITH REPORTED SIDE EFFECTS**

**(Withdrawn from market in September 2004)**

⇒ **Drug:** Byetta

**Used for:** Type 2 diabetes

**Side effect:** Increase of blood glucose level

⇒ **Drug:** Humira

**Used for:** Rheumatoid arthritis

**Side effect:** Injection site pain

⇒ **Drug:** Chantix

**Used for:** Smoking cessation

**Side effect:** Nausea

⇒ **Drug:** Tysabri

**Used for:** Multiple sclerosis

**Side effect:** Fatigue

⇒ **Drug:** Vioxx\*

**Used for:** Arthritis

**Side effect:** Heart attack

In 1930s, **Paul Hermann Muller** a research chemist at the **firm of Geigy in Basel**, with the help of science introduced the first modern insecticide (DDT: **dichloro diphenyl trichloroethane**) and it won him the 1948 Nobel Prize in Physiology and Medicine for its credit of saving thousands of human lives in World War II by killing typhus- carrying lice and malaria-carrying mosquitoes, dramatically reducing **Malaria and Yellow Fever** around the world. But in the late 1960s DDT which was a world saver was no longer in public favor – it was blamed moderately **hazardous and carcinogenic**. And most applications of DDT were banned in the U.S. and many other countries. However, DDT is still legally manufactured in the U.S., but only sold to foreign countries. At a time when **Napoleon was almost disturbing whole of Europe** due to his aggressive policies and designs and most of the world was at war – the science gave birth to the many inventions which took place in the field of textile industry and due to invention of steam engine and development of means of transportation and communication. Though it gave birth in England, yet its inventions spread all over the world in a reasonably period. And **rapid industrialization** was a consequence of new inventions and demand for expansion of large industrial cities led to the large scale exploitation of agricultural land. And socio-economic growth was peaking, as industries were booming, and agricultural lands were decreasing, as the world enjoyed the fruits of the rapid industrialization. As a result of this, the world's population was growing at an exponential rate and the world's food supply was not in the pace of the population's increase. And this resulted in widespread famine in many parts of the world, such as England, and as starvation was rampant. In that time line, science suppressed that situation by producing more ammonia through the Haber Bosch Process (**more ammonia**, more fertilizers. **more fertilizers**, more food production). But at the same time, science which solved the world's hunger problems also led to the production of megatons of TNT (**trinitrotoluene**) and other explosives which were dropped on all the cities leading to the death of some hundred million people.

Rapid industrialization which once raised the **economic and living standard of the people** has now become a major global issue. The full impact of an industrial fuel economy has led to the **global warming** (i.e., the increase of Earth's average surface temperature due to effect of too much carbon dioxide emissions from industrial centers which acts as a **blanket, trap heat and warm the planet**). And as a result, **Greenland's ice shelves** have started to shrink permanently, disrupting the world's weather by altering the flow of ocean and air currents around the planet. And violent swings in the climate have started to appear in the form of floods, droughts, snow storms and hurricanes.

And industries are the main sources of sulfur dioxide emission and automobiles for nitrogen oxides. And the oxides of nitrogen and sulfur combine with the **moisture in the atmosphere to form acids**. And these acids reach the Earth as rain, snow, or fog and react with minerals in the soil and release deadly toxins and affect a variety of plants and animals on the earth. And these acids damage buildings, historic monuments, and statues, especially those made

of rocks, such as limestone and marble, that contain large amounts of calcium carbonate. For example, acid rain has reacted with the marble (**calcium carbonate**) of **Taj Mahal** (an ivory-white marble mausoleum on the south bank of the **Yamuna river in the Indian city of Agra**) causing immense damage to this wonderful structure (i.e., Taj is changing color).

And science once introduced refrigerators for prolonging storage of food but now refrigerators are the active sources of **chlorofluorocarbons (CFC)** which interact with the **UV light** during which chlorine is separated. And this chlorine in turn destroys a significant amount of the ozone in the high atmosphere admitting an intense dose of **harmful ultraviolet radiation**. And the increased ultraviolet flux produces the related health effects of skin cancer, cataracts, and immune suppression and produces a permanent change in the nucleotide sequence and lead to changes in the molecules the cell produce, which modify and ultimately affect the process of photosynthesis and destroy green plants. And the **massive extinction of green plants** may lead to famine and immense death of all living species including man.

Fertilizers which once provided a sufficient amount of the essential nitrates to plants to synthesize chlorophyll and increase crop growth to feed the growing population and satisfy the demand for food, has now blamed for causing **hypertrophication** i.e., fertilizers left unused in soil are carried away by rain water into lakes and rivers, and then to coastal estuaries and bays. And the overload of fertilizers induces explosive growth of **algal blooms**, which prevents light from getting into the water and thereby preventing the aquatic plants from photosynthesizing, a process which provides oxygen in the water to animals that need it, like fish and crabs. So, in addition to the **lack of oxygen from photosynthesis**, when algal blooms die they decompose and they are acted upon by **microorganisms**. And this decomposition process consumes oxygen, which reduces the concentration of dissolved oxygen. And the depleted oxygen levels in turn lead to fish kills and a range of other effects promoting the loss of species biodiversity. And the large scale exploitation of forests for industrialization and residential purposes has not only led to the loss of biodiversity but has led the diseases like **AIDS (Acquired immunodeficiency syndrome caused by a virus called HIV (Human immunodeficiency virus))** which alters the immune system, making victim much more vulnerable to infections and diseases) to transmit from forests to cities.

At the dawn of the early century, the entire world was thoroughly wedded to fossil fuels in the form of oil, natural gas, and coal to satisfy the demand for energy. And as a result, **fossil fuels were becoming increasingly rare** and were slowly dooming to extinction. In that period, science (**upon the work of Curie and Einstein**) introduced nuclear fission reaction (the process by which a heavy nucleus breaks down into two or more smaller nuclei, releasing energy. For example: if we hit a **uranium-235** nucleus with a neutron, it split into a krypton nucleus, a barium nucleus, three neutrons, and energy) as an alternate to the world's energy supply and therefore prevented the world economy from coming to a grinding halt. But at the same time science introduced **nuclear fission reaction** to produce thousands of nuclear weapons, which were dropped on all the cities in World War II amounted to some two million tons, **two megatons, of TNT**, which flattened heavily reinforced buildings many kilometers away, the

firestorm, the gamma rays and the thermal neutrons, which effectively fried the people. A school girl who survived the nuclear attack on Hiroshima, the event that ended the Second World War, wrote this first-hand account:

"Through a darkness like the bottom of hell, I could hear the voices of the other students calling for their mothers. And at the base of the bridge, inside a big cistern that had been dug out there, was a mother weeping, holding above her head a naked baby that was burned red all over its body. And another mother was crying and sobbing as she gave her burned breast to her baby. In the cistern the students stood with only their heads above the water, and their two hands, which they clasped as they imploringly cried and screamed, calling for their parents. But every single person who passed was wounded, all of them, and there was no one, there was no one to turn to for help. And the singed hair on the heads of the people was frizzled and whitish and covered with dust. They did not appear to be human, not creatures of this world."

Nuclear breakthroughs have now turned out to be the biggest existential threat to human survival. Nuclear waste is banking up at every single nuclear site. And as a result, every nation is suffering from a massive case of nuclear constipation (that Causes **Intractable Chronic Constipation** in Children).

Ninety-one percent of world adults and 60 percent of teens own this device that has revolutionized the most indispensable accessories of professional and social life. Science once introduced this device for wireless communication but now they are pointed to as a possible cause of everything from infertility to cancer to other health issues. And in a study conducted at the University of London, researchers sampled 390 cell phones to measure for levels of **pathogenic bacteria**. The results of the study showed that 92 percent of the cell phones sampled had heavily colonized by high quantities of various types of disease-prone bacteria with high resistances to commonly used antibiotics (**around 25,000 bacteria per square inch**) and the results concluded that their ability to transmit diseases of which the mobile phones are no exception. The fluoridation of water at optimal levels has been shown to be highly beneficial to the development of tooth enamel and prevention of dental cavities since the late 1800s. And studies showed that children who drink water fluoridated at optimal levels can experience **20 to 40 percent less tooth decay**. But now fluoridation of water has termed to cause lower IQ, memory loss, cancer, kidney stones & kidney failures – faster than any other chemical.

Science once introduced irradiation to prevent food poisoning by destroying molds, bacteria (such as one – celled animal 'Amoeba' – that have as much information in their DNA as **1,000 Encyclopaedia Britannicas** – which is almost unbelievably minute form of life which, after being cut into six separate parts, is able to produce six complete bodies to carry on as though nothing had happened), **yeast and virus** (the smallest living things which cannot reproduce itself unaided and therefore it is lifeless in the true sense. But when placed in the plasma of a living cell and, in forty eight minutes it can reproduce itself four hundred times) and control microbial infestation. But now it has been blamed to cause the loss of nutrients, for example vitamin E levels can be reduced by 25% after irradiation and vitamin C by 5-10% and damage food by breaking up molecules and creating free radicals. And these **free**

**radicals combine with existing chemicals (like preservatives) in the food to produce deadly toxins.** This has caused some food manufacturers to limit or avoid the process and bills have even been introduced to ban irradiated foods in public cafeterias or to require irradiated food to carry sensational warning labels. And the rapid advancement of science combined with human aggression and aim for global supremacy has led even the smaller nations to weaponize anthrax spores and other viruses for maximum death and destruction. And thus the entire planet is gripped with fear that one day a terrorist group may pay to gain access to **weaponized H5N1 flu** and other viruses. And the rapid development of nuclear technology has led to the banking up of nuclear waste at every single nuclear site. And as a result, every nation is suffering from a massive case of nuclear constipation. And the enormous automation, capacity of artificial intelligence and their ability to interact like humans has caused the humans to be replaced by artificial intelligence. But now artificial intelligence is taking off on its own, and re-designing itself at an ever increasing rate. And this has turned out to be the biggest existential threat to human survival (i.e., one day artificial intelligence may plan for a war against humanity). Highly **toxic gases, poisons, defoliants, and every technological state are planning for it to disable or destroy people or their domestic animals,** to damage their crops, and/or to deteriorate their supplies, threaten every citizen, not just of a nation, but of the world

**References:**

- **The human health effects of DDT ...** by MP Longnecker (1997).
- Side Effects of Drugs Annual: **A worldwide yearly survey of new data and ...** edited by Jeffrey K. Aronson.
- Unstoppable Global Warming: **Every 1,500 Years** by Siegfried Fred Singer, Dennis T. Avery (2007).
- **Acid Rain** by Louise Petheram (2002).
- **Eutrophication:** Causes, Consequences, Correctives; Proceedings of a Symposium edited by National Academy of Sciences (U.S.).
- Ammonia: principles and industrial practice **by Max Appl (1999).**

**Good and Bad Effects of Chemistry:**

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**What is Chemistry?**

Chemistry (a **creative discipline chiefly concerned with the study of matter: its structure, composition, properties, and reactivity through chemical reactions**) is important because everything you do like cooking, fermentation, glass making, and metallurgy is chemistry! Even our Human body is made of chemical elements.

⇒ **Element:**

Oxygen

**Percent by Mass:**

65

⇒ **Element:**

Carbon

**Percent by Mass:**

18

⇒ **Element:**

Hydrogen

**Percent by Mass:**

10

⇒ **Element:**

Nitrogen

**Percent by Mass:**

3

⇒ **Element:**

Calcium

**Percent by Mass:**

1.5

⇒ **Element:**

Phosphorus

**Percent by Mass:**

1.2

⇒ **Element:**

Potassium

**Percent by Mass:**

0.2

⇒ **Element:**

Sulfur

**Percent by Mass:**

0.2

⇒ **Element:**

Chlorine

**Percent by Mass:**

0.2

⇒ **Element:**

Sodium

**Percent by Mass:**

0.1

⇒ **Element:**

Magnesium

**Percent by Mass:**

0.05

⇒ **Elements:**

Iron, Cobalt, Copper, Zinc, Iodine

**Percent by Mass:**

Trace

⇒ **Elements:**

Selenium, Fluorine

**Percent by Mass:**

Minute amounts

Chemical reactions (**an integral part of technology and indeed of life itself that involves a rearrangement of the constituent atoms of the reactants to create one or more different substances — the products**) occur when you breathe, eat, or just sit there burning fuels, smelting iron, making liquid crystals and semiconductors, brewing beer, and making wine and cheese. All matter is made of chemical elements, so the importance of chemistry is that it's the study of everything — is part of everything in our lives.

**Good Effects:**

- Helps mankind develop food preservatives that are widely used in the food industry to preserve **the natural characteristics of food and to fight food spoilage** caused by bacteria, molds, fungus, and yeast.
- Helps mankind develop fuels that we use today as dense repositories of energy that are consumed to provide energy services such as heating, transportation and electrical generation.
- Helps mankind enclose the **design, development, and synthesis of pharmaceutical drugs** that prolong our life and help us fight diseases.
- Helps mankind develop cosmetics that we use today to enhance or alter the appearance of the face or fragrance and texture of the body.
- Helps mankind develop **pesticides that are widely used in agriculture for the protection of crops** from disease, insects, rodents and regulating plant growth and killing weeds.

- Helps mankind develop fertilizers that enhance the natural fertility of the soil and improve growth and productiveness of crops.
- Helps mankind analyze the non-biological trace evidence that is brought in from crime scenes and reach a conclusion based on tests run on that piece of evidence.
- Helps mankind devise new ways to **make the manufacturing of the products (from fireworks to explosions)** easier and more cost effective.
- Helps mankind develop safety strategies for handling dangerous materials, and supervise the manufacture of nearly every product (from pharmaceuticals to fuels and computer components) we use.
- Helps mankind to remove valuable metals from an ore and refine the extracted raw metals into a purer form.

#### **Bad effects:**

- Accidents or incorrect use of **household cleaning products may cause** immediate health effects, such as skin or eye irritation or burns, or may influence children's gut bacteria and cause obesity.
- Chemistry is at the heart of **environmental issues**. **Chemical pesticides** are known to pollute the environment as they can work their way into the food chain and accumulate or persist in the environment for many years.
- **Maleic Hydrazide is generally added to potatoes to keep them from sprouting**. It is a known chemical inhibitor and can even lead to cancer in the long run.
- Plastic cannot biodegrade. Toxic chemicals leach out of plastic water bottles, bags and straws make their way into our bodies and cause a variety of health issues that result cancer, reproductive issues, immune system suppression and problems with childhood development.
- Chemicals that are widely **used in cosmetics and personal care products** can cause changes in women's reproductive hormones and harm women's fertility or even cause breast cancer.
- Chemical waste is usually a byproduct of a large scale factories and laboratories that — if improperly managed or disposed of — may pose substantial hazards to human health and the environment.
- The excessive use of fertilizers can **destroy soil nutrients like sodium, potassium, nitrogen** and creates imbalances in soil fertility and result in failure of crops in agriculture and can pollute groundwater.