

America's Love Affair with Highly Toxic Chemicals: DDT, Agent Orange, Depleted Uranium, Glyphosate

By [Richard Gale](#) and [Dr. Gary Null](#)
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A very common occurrence observed during the 1940s and 50s was a truck slowly driving down streets throughout large and small communities, very much like a Good Humor truck. Families would bring their children out and stand along the road as they were gently sprayed in a fog of a highly toxic insecticide, DDT.

Citizens were doing their duty with absolute faith in the nation's health authorities that this was an important public health measure.

We were told DDT would curtail infectious diseases because of its success in poorer malaria-ridden nations.

Jump ahead to Vietnam, Cambodia and Laos in the 1960s and **the US military's indiscriminate spraying of the powerful defoliant Agent Orange.**

Again, the American public was assured the chemical was necessary and safe to the hundreds of thousand American troops who were exposed to it.

Moving forward to the first Gulf War in 1991, American soldiers were told that the hundreds of metric tons of depleted uranium munitions were safe and there was no fear of any adverse effects resulting from radioactive contamination in the combat arena. Depleted uranium would again become part and parcel to America's future wars in Yugoslavia, Afghanistan and Iraq.

Finally, later in the 1990s there appeared another widely used toxic chemical, glyphosate or Roundup. It was heralded as an essential broadleaf herbicide that would enable American agriculture to flourish. And again, federal environmental and health authorities assured the public glyphosate was safe and posed no risks to human health nor

the environment.

What do these toxic substances have in common? For each we were told they posed no risk to human health and no long-term environmental threats because it was assumed they were readily biodegradable. Whether it was the EPA, USDA, or the Department of Defense, each knew the truth. But equally important, not a single federal agency ever came forward to challenge these false assertions. All the advocates, scientists and journalists who brought forth evidence to the contrary, and exposed these chemicals' very serious risks were either ignored, discredited or attacked. Yet historically they were proven to be correct.

The problem was that although the public and activists had won the battle to have some of these chemicals banned, such as DDT, Agent Orange and now hopefully glyphosate in the future, politicians and citizens simply assume it is all behind us. But we rarely ever put crises and wrongdoing behind us. We assume, there will no longer be consequences and therefore the past doesn't warrant further attention. However, the deadly legacy of thousands of toxic chemicals once released can last for decades and even centuries. The question, therefore, is why do we ever bother to believe anything from our federal agencies and their propaganda? Why do we trust anyone when we have received nothing but a litany of lies, retaliations, legislative obstruction and cover-ups when people have access to the truth.

DDT



Dichlorodiphenyltrichloroethane, commonly known as DDT, stands as one of the most notorious chemical compounds in history.

DDT was discovered in 1874 by Othmar Zeidler; decades later, Paul Muller identified DDT's powerful insecticidal properties and this was quickly followed by DDT being manufactured widely for agricultural and pest control purposes. In 1948, Muller earned a Nobel Prize for his discovery.

The highly toxic chemical gained prominence in the 20th century due to its effectiveness

against disease vectors like mosquitoes and agricultural pests.

Its widespread application accelerated during World War II in the Pacific arena, and later became a cornerstone in global public health campaigns, particularly in eradicating malaria, typhus, body lice and other vector-borne diseases. As DDT gained widespread use, concerns about its impacts on human health surfaced. The publication of Rachel Carson's groundbreaking book *Silent Spring* in 1962 further increased public awareness not only about DDT's threats to human health but also the toxin's environmental risks. Her book launched campaigns forcing governments to take regulatory action. Finally in 1972, the United States banned DDT for agricultural use and this was followed by several international agreements to further restrict its usage.

DDT's history however is particularly nefarious. After the second World War and the discovery of DDT's extraordinary pesticide potential, the American and British militaries decided to test the chemicals safety on a refugee camp in Naples, Italy.

According to the research of Elena Conis in her book *How to Sell a Poison: The Rise, Fall and Toxic Return of DDT*, over a million citizens were doused with the insecticide. Because no immediate health risks were noted, the US army sprayed the chemical widely in the Pacific in order to kill disease-carrying insects that hindered the US offensive against Japan. After the war, DDT was sprayed indiscriminately in orchards, farms, and livestock facilities. It was used in walls, mattresses and clothing. Families doused pets in DDT to prevent fleas.[1]

The leading manufacturers and distributors of DDT included its largest producer Montrose Chemical Corporation in California and followed by Monsanto, Velsicol Chemical and Shell Chemical. After the EPA's ban, numerous lawsuits were filed against the chemical companies for knowingly producing a harmful toxin without adequate safety measures or warnings. The most notable case was the US Department of Justice suit against Montrose resulting in large fines and the enforced penalties requiring the company to undertake massive cleanup efforts to remediate the environmental damage.

Despite being banned, the US remains one of the world's leading manufacturers of DDT but for export only, especially for mosquito control in sub-Saharan Africa, Latin America and certain Asian nations. Yet this does not mean DDT is no longer used in countries that have banned it. Some organochlorine pesticides still widely used in the US are structurally similar to or direct chemical analogs of DDT. Endosulfan, for example, is structurally similar to DDT. Although in 2007 the EPA determined the pesticide posed a far greater risk to human health than previously thought, the agency has no steps to regulate it further. Endosulfan continues to be widely used in the US for pest control in fruit, vegetable and field crops. In 2022, Indian scientists observed the chemical disrupts DNA in germ cells that contribute to an increase in infertility.[2] A Spanish study found that 100 percent of agricultural workers who sprayed endosulfan on their crops had residues of the chemical in their blood. Since then, the European Union ruled it to be too dangerous for use and banned it completely.[3]

DDT is a lipophilic chemical, which means it accumulates in the body's fatty tissues leading to bioaccumulation and biomagnification in the food chain. Human exposure primarily occurs through ingestion of DDT-contaminated food, particularly fatty meats, poultry, dairy products, fish and to a much lesser extent plant foods such as leafy vegetables. In the mid-20th century, DDT was also sprayed in buildings for pest control. Depending upon the type of soil it is found in, DDT's half-life is 2-15 years. In an aquatic environment, DDT can

persist for up to 150 years. Once absorbed, DDT metabolizes in the liver to form DDE (dichlorodiphenyldichloroethylene), a persistent toxic metabolite with a longer half-life than DDT and heightened toxicity.[4] Chronic exposure to DDT and its metabolites has been linked to various health effects, including but not limited to:

DDT is an endocrine disruptor that potentially leads to reproductive and developmental abnormalities. Studies have discovered definitive associations between DDT exposure and certain cancers, especially breast cancer.[5] Researchers at Tulane University's Cancer Center discovered that human stem cells exposed to DDT underwent profound alterations in gene expression and homeostatic imbalances that may contribute to increased cancer cases.[6]

Prenatal and childhood exposure to DDT has been implicated in neurodevelopmental disorders and cognitive impairments. DDT and its metabolites have been shown to cross the placental barrier and affect the fetus. A University of California at Berkeley study concluded that prenatal exposure to DDT and DDE were associated with early childhood neurodevelopmental delays, and a Spanish study observed a relationship between prenatal exposure to respiratory illnesses in infants under 18 months.[7] DDT exposure may also suppress immune function, increasing susceptibility to infections and autoimmune diseases.

DDT's environmental persistence and long-range transport have profound ecological ramifications. It accumulates in soil, water, and sediments, posing risks to aquatic and terrestrial ecosystems. Most important, DDT's tendency to accumulate and magnify through the food chain results in elevated concentrations in apex predators, such as birds of prey such as bald eagles and falcons, leading to reproductive failure and population declines. In 2021, a rather chilling Canadian study published in the *Journal of Environmental Toxicological Chemistry* attempted to determine the cause for rapidly declining bird flocks, such as robins, that frequently inhabit fruit orchards that were heavily sprayed with DDT between the late 1940s and into the 1970s. The researchers were following up on the presence of DDT and its metabolites after a 26-year period and found there was no noticeable biodegradation. DDT levels remained relatively the same, which would explain for DDT's biomagnification in the birds.[8]

Although its use is now limited, the verdict for the toxin's reemergence remains open. In 2006, the World Health Organization reversed its 30-year earlier policy against DDT indoor spraying of home dwellings and workspaces for insect control. Reporting on the WHO's decision, the *Washington Post* ignores the pesticide's risks and states the now obvious lie that "the most famous pesticide in the world, DDT has few if any adverse effects in human beings." [9] The *Post* heralds its past effectiveness in reducing malarial cases, and implicitly lays out an argument to bring back its use in the US and other Western nations in the event of any future tropical infectious disease outbreaks. More recently, citing the WHO's bogus 2016 global zika virus scare, the right-wing Cato Institute advocated for an increase in DDT spraying while also ignoring its life-threatening dangers.[10] Cato of course is simply a corporatized think tank, co-founded by Charles Koch and largely funded by the Koch Brothers, with a history of putting corporate profits above human and environmental health and flirts with climate change denialism.

Agent Orange

Image: Agent Orange Barrels at Johnston Atoll circa 1976 (Source: Public Domain)



The deadly herbicide known as Agent Orange is a scarlet letter that has been branded into America's spine, which should have been tried as a crime against humanity in the international courts. Its widespread use as a defoliant to lessen Vietnam's dense jungle canopy during the war has left a lasting legacy of environmental destruction and long-term health effects to exposed populations. The chemical mixture sprayed on millions of acres of forest, jungle and farmland was up to 20 times the concentration recommended for conventional killing of plants.[11] The US military also dumped millions of gallons on farms to destroy the nation's food supply. According to government and medical institutional statistics approximately 400,000 Vietnamese citizens died from the US military spraying of Agent Orange between 1962 and 1971.[12,13] The Vietnamese government estimates that 3 million Vietnamese have suffered debilitating illnesses from exposure. An additional 300,000 US veterans are estimated to have died, largely from a variety of cancers, due to chemical exposure over the course of decades. This is over three times the number of Japanese killed in the nuclear bombings of Hiroshima and Nagasaki. The Veterans Administration notes 50 diseases associated with the agent and 20 different birth defects in children birthed to Vietnam veterans.

Agent Orange was developed in the late 1940s and originally used in large-scale industrial agriculture and along railroads and power lines to control foliage overgrowth. The US government banned its domestic use in 1971 but only after it had already been used widely on American grasslands and pastures. However, it was the British military that first employed Agent Orange as a bioweapon against Malay Communist guerillas during the Malayan Emergency that ended in 1960.[14]

Agent Orange is a herbicidal mixture of two synthetic compounds: 2,4-D and dioxin or 2,4,5-T. Its toxicological effects on human health are well-documented and multifaceted. The chemical is carcinogenic and has been linked to increased risks of various cancers. Many studies among Vietnamese populations have identified elevated rates of soft tissue sarcoma, non-Hodgkin lymphoma, Hodgkin lymphoma, and prostate cancer. Prenatal exposure to Agent Orange has been linked to adverse reproductive outcomes such as increased birth defects and developmental abnormalities in children. A study published in the *International Journal of Environmental Research and Public Health* reported higher rates of birth defects among residents of Agent Orange-sprayed areas in Vietnam compared to non-sprayed areas.[15] Other adverse reproductive outcomes include very high instances of spontaneous abortions and stillbirths. There is also growing evidence suggesting that exposure to Agent Orange may have transgenerational effects impacting the health of subsequent generations. A study published in the journal *Environmental Research* lists epigenetic transgenerational inheritance of disease susceptibility in subsequent generations for puberty abnormalities and for testis, ovary, kidney, prostate and obesity pathologies.[16] A Korean analysis of over 111,000 Korean veterans health conditions who fought alongside US troops in Vietnam reported that those exposed to Agent Orange had higher incidences of

hypothyroidism, diabetes, pituitary gland disorders, spinal muscular atrophy, Alzheimer's disease, and other neurological diseases.[17] Some studies have drawn associations between exposure to Agent Orange and neurological disorders, including Parkinson's disease and peripheral neuropathy.[18,19]

Agent Orange contamination persists in the soil and water of sprayed areas in Vietnam, Cambodia and Laos, posing ongoing risks to human health and ecosystems. Studies have detected elevated levels of dioxin in soil and sediment samples from sprayed areas, indicating long-term environmental persistence. In humans, the toxin can have a half-life of up to 20 years in humans; however, depending upon the type of soil and location its half-life may vary. Agent Orange deeply buried in the sediments of bodies of water can persist for over 100 years and continue to pose serious risks to human health and the environment by gradual leaching into soil and water consumption. In those countries victimized by the US military's bioweapons operations, there has been an enormous loss of biodiversity and ecological disruption. A study published in the journal *Themis* documented reduced species diversity and altered community composition in forests affected by Agent Orange spraying, highlighting the herbicide's long-lasting impacts on ecosystems.[20]

The use of Agent Orange during the Vietnam War stands as a stark reminder of the devastating consequences of unchecked corporate greed and corruption. It is not a surprise that Agent Orange's dangers to human health have a history of being covered up by the US government. The manufacturers of Agent Orange have been implicated in a disturbing pattern of deceit and cover-up regarding the herbicide's known health and environmental risks. From its inception, there were indications that Agent Orange posed significant risks to human health and the environment. However, rather than heed these warnings, the manufacturers of Agent Orange chose to prioritize profits over public safety. They embarked on a campaign of deception, downplaying the herbicide's toxicity and actively suppressing scientific evidence that contradicted their interests. Key individuals within these companies played pivotal roles in perpetuating this corruption. Executives and scientists at Dow Chemical Company and Monsanto were aware of the health hazards associated with Agent Orange, yet they chose to withhold this information from the public and regulatory authorities. Instead, they engaged in tactics aimed at discrediting independent research and manipulating data to obscure the truth about Agent Orange's harmful effects. Federal agencies tasked with regulating pesticides and protecting public health were also complicit in this corruption. The US Environmental Protection Agency (EPA) and other government bodies failed to hold the manufacturers of Agent Orange accountable for their actions. Regulatory decisions were influenced by industry lobbying and political pressure, resulting in inadequate oversight and lax enforcement of safety standards.

In 1965, before spraying started to reach its peak between 1966 and 1968, the National Cancer Institute in collaboration with the Bionetics Research Laboratory conducted the first studies to evaluate Agent Orange's teratogenic effects—how the herbicide disturbed the growth and development of an embryo or fetus leading to developmental malformations. The study concluded that the chemical did indeed cause malformations and stillbirths in higher doses, but due to industry pressures the study was not released to the public until four years later.[21] Even then the study was largely ignored by the government and the Defense department. In 1970, another study, but this time ordered by Congress and led by the Department of the Defense concluded four years later that they were unable to observe any indication that Agent Orange and other herbicidal bioweapons used in Vietnam directly damaged human health.[22]

One of the leading eyewitnesses on the corruption and war crimes associated with the US's use of Agent Orange in Southeast Asia is Philip Jones Griffiths. Griffiths is a British pharmacist turned photographer and war journalist who conducted photo-reportage in Vietnam during the mid-1960s. He has extensively researched and written about the long-term human and environmental results of tens of millions of gallons of Agent Orange dumped on Southeast Asia. His book *Agent Orange: Collateral Damage in Vietnam* documents the destruction and suffering due to the US Air Force's biochemical weapons project Operation Ranch Hand. Likewise, Professor Marjorie Cohn, a former international legal scholar at Thomas Jefferson School of Law and former president of the National Lawyers Guild, has outlined the legal implications of the weaponization of Agent Orange in the Vietnam War. Cohn argues that the use of Agent Orange by the US military in Vietnam constitutes both a violation of international law and a war crime. She contends that the indiscriminate spraying of Agent Orange and other herbicides in Vietnam caused widespread environmental destruction and inflicted severe harm on civilian populations, constituting acts of chemical warfare prohibited under international humanitarian law. Furthermore, she criticizes the complicity of US government officials and chemical companies in perpetuating the use of Agent Orange despite knowledge of its harmful effects. She highlights the role of corporate interests and political influence in shaping US military policy and regulatory decisions, leading to the continued use of Agent Orange despite evidence of its toxic effects.[23]

Depleted Uranium

Image: Mark 149 Mod 2 20mm depleted uranium ammunition for the Phalanx CIWS aboard USS *Missouri*. (Source: Public Domain)



Depleted uranium (DU) is a byproduct of the uranium enrichment process, primarily composed of uranium-238 with a reduced concentration of uranium-235. While DU has found various industrial applications, its use in weaponry has raised significant concerns due to its potential toxicological effects on human health and the environment. The primary concern associated with depleted uranium is its radioactive properties. DU emits alpha,

beta, and gamma radiation, which can penetrate the human body and pose risks of internal radiation exposure. When DU particles are inhaled or ingested, they can become lodged in tissues and organs, leading to chronic irradiation and potential DNA damage. In addition to its radioactive properties, DU also exhibits chemical toxicity due to its heavy metal characteristics. It can interfere with cellular processes, disrupt enzyme function, and induce oxidative stress, leading to cellular damage and inflammation.

Depleted uranium first saw widespread use in military applications during the 1991 Gulf War in the deserts of Kuwait and Iraq. DU was employed primarily as armor-piercing ammunition due to its high density and penetrative capabilities. It was during the first Gulf War that exposure to DU radiation generated controversy due to concerns about human health and environmental risks. During Operation Desert Storm, a Nuclear Medicine Division in Saudi Arabia estimated that 350 metric tons of DU was used, which contributed to 3-6 million grams being released into the atmosphere.[24] Yet, despite all of the warning signs during the Gulf War, the US military continued to deploy DU munitions in later conflicts including the wars in the Balkans, Afghanistan and Iraq. During the 2003 invasion of Iraq, a shocking 1,000 to 2,000 tons were dropped in the first three weeks of the war. More bothersome was the US military's use of DU missiles in heavily populated urban areas that exposed millions of civilians to long-term radiation.[25] The amount of DU dropped in Afghanistan remains unknown; however, birth defects are increasing and elevated levels of uranium have been found in Kabul's drinking water.[26,27,28]

The US government and the Department of Defense maintain that DU munitions are safe for military use and pose minimal risks to human health and the environment when employed in accordance with its own guidelines and regulations. The official stance on the safety of depleted uranium is largely based on biased assessments conducted by government agencies and military contractors. According to the DoD, DU munitions are subject to rigorous testing and evaluation to ensure compliance with safety standards and operational requirements; however, the actual research has been shown to be extremely weak and ignores DU's health threats after ignition and subsequent dispersal into the atmosphere as nano-particulate matter. This increases human exposure to higher levels of radiation via inhalation, ingestion and skin contact.

Although the majority of concerns focus upon DU's highly toxic effects on American veterans in the Middle Eastern wars, **millions of Afghani and Iraqi civilians were victims of indiscriminate bombing.** Some independent studies have looked at DU's effects on these populations. In 2021, researchers at the American University of Beirut in Lebanon analyzed observational studies from 11 electronic databases with data gathered between 1990 and 2020 reporting on cancers, birth defects, immune system dysfunction and mortality among the Iraqi population. Eight-three percent of reporting found a positive association between depleted uranium exposure and illness.[29] Likewise the independent Uranium Medical Research Center conducted field investigations and medical assessments of DU-exposed populations in Iraq. These studies documented cases of cancer, respiratory illnesses, and reproductive disorders among Iraqi civilians living in DU-contaminated areas.[30] In Basra, which was bombed by the US during the first Gulf War, research out of the Canadian University Dubai found that cases of childhood leukemia increased 60 percent by 1997, and birth defects tripled.[31] Only a highly toxic environmental contaminant could cause this level of genetically related conditions in a short period of time.

An article in the *Harvard International Review* suggests that nations could turn to the Geneva Convention to prove depleted uranium is illegal once it is firmly established by

consensus that it is extremely harmful to human health and the environment. The paper states, "The United States and other countries perpetuate imperialism by deploying depleted uranium without fully considering its long-term impact on local communities." The International Coalition to Ban Uranium Weapons has already written a formal ban for international review.[32] The case against DU in warfare is more likely a war crime in the event safer and equally effective alternatives could be used such as tungsten.[33] There are other international rules, such as the Principle of Distinction and the Principle of Proportionality, that could warrant DU being banned.

Research based upon epidemiological studies, animal research and in vitro experiments on depleted uranium exposure has identified a wide variety of diseases and health conditions. These include: higher rates of respiratory diseases, including bronchitis, asthma, and chronic obstructive pulmonary disease (COPD);[34] elevated levels of uranium in the kidneys leading to kidney damage and impaired renal function;[35] increased cancer risk, particularly leukemia, lymphoma, and lung cancers and other respiratory malignancies;[36] possible neurobehavioral disorders, such as depression, anxiety, and post-traumatic stress disorder (PTSD);[37] reduced fertility and increased rates of miscarriages and birth defects among individuals exposed to DU;[38] dysregulation of immune response leading to chronic inflammation and autoimmune disorders; disruption of cardiac function and vascular health due to uranium's toxic effects on the cardiovascular system;[39] increased risk of osteoporosis, bone fractures, and skeletal deformities;[40] disruption of hormonal balance and function, potentially leading to endocrine disorders and metabolic disturbances;[41] induced DNA damage and genomic instability, increasing the risk of mutations and genetic abnormalities.[42]

Finally, depleted uranium has been linked to Gulf War Syndrome (GWS), which refers to a collection of symptoms experienced by veterans of the 1990-1991 Gulf War. GWS is characterized by a range of physical, cognitive, and psychological conditions, including fatigue, musculoskeletal pain, respiratory distress, skin disorders, cognitive and mood difficulties, and gastrointestinal problems. More severe illnesses include cancer and breakdowns in the immune system. Overall, Gulf War Syndrome is a complex and poorly understood condition characterized by a constellation of symptoms affecting multiple bodily systems. Because veterans were exposed to a wide range of environmental hazards besides depleted uranium, no single cause can be implicated. Other threats to human health during the conflict include the large oil well fires, chemical nerve agents such as sarin and cyclosarin, a battery of vaccinations including anthrax, insecticides, and finally combinations of any or all of these hazards. The stress and trauma of combat may also have exacerbated GWS symptoms thereby contributing to overall symptom severity.

Glyphosate (Roundup)

Image is from Flickr



In March 2015, the World Health Organization declared that Monsanto's flagship product, its herbicide glyphosate or Roundup, is a probable human carcinogen. This decision placed pressure on countries' national health ministries to begin taking a hard second look at glyphosate's health and environmental dangers and begin raising questions whether or not to ban the chemical. As of 2019, 33 countries have enforced full or partial bans to considerably restrict its use. In the US, however, no concerted efforts have been made to even put the scientific evidence under serious independent evaluation without interference from the Big Ag industry. The US continues to stand by its 2019 EPA ruling that glyphosate is "not likely to be carcinogenic to humans."^[43] Likewise, as a single authoritative entity, the unelected European Commission continues to support private industry's claims and denies Roundup's more serious health risks. Although glyphosate is the single most widely used pesticide in Europe, individual EU nations are permitted to rule at their own discretion. France, Netherlands and Belgium have approved partial bans, and other European nations are lining up to follow suit.^[44]

Glyphosate is the most widely used herbicide in the world today. The US is the largest consumer, using approximately 20% of the world's Roundup. According to a more recent University of Maryland report, over 100 million pounds of glyphosate are applied to American farms, public spaces, parks and private lawns annually.^[45]

Over the years a large body of independent research has accumulated and now collectively provides a sound scientific rationale to confirm that glyphosate is far more toxic and poses more serious health risks to animals and humans than Monsanto and the US government admit. Among the many diseases and health conditions non-industry studies identified are Alzheimer's, Parkinson's and autism since Roundup has been shown to instigate aluminum accumulation in the brain. The herbicide has been responsible for reproductive problems such as infertility, miscarriages, and neural tube and birth defects. It is a causal agent for a variety of cancers: brain, breast, prostate, lung and non-Hodgkin lymphoma. Other disorders include chronic kidney and liver diseases, diabetes, heart disease, hypothyroidism, and leaky gut syndrome.^[46] In addition to lung cancer, glyphosate may be responsible for today's growing epidemics of chronic respiratory illnesses among farm workers and their families. However, these findings derive from outside the Big Agriculture industry. Private industries routinely defend themselves by posing their own research to refute independent reports. Consequently, for several decades it has been he-said-she-said combat.

The EPA is fully aligned with Monsanto's safety claims and limits glyphosate's risks to kidney, reproductive and carcinogenic damage only from very long-term exposure to high levels of the toxin. Anything under that is considered harmless. The EPA continues to approve small amounts of glyphosate as safe in drinking water to children. A review of existing data sponsored by Moms Across America found that out of 21 drinking water

samples analyzed, 13 had glyphosate levels between 0.08 and 0.3 ug/L, well below the EPA's limit, but significantly above the European Union's limit of 0.1 ug/L.[47]

To this day, Monsanto continues to assert that Roundup is environmentally friendly. We are told it biodegrades rapidly and therefore poses no long-term risks after repeated usage. We are told that the herbicide is ideal for weed control. Throughout the US, it has been liberally sprayed on our public parks, school playgrounds, sporting fields, and throughout our lawns and gardens. We are told it doesn't bio-accumulate in the body's cells and tissues and is excreted rapidly. We are also told that glyphosate toxicity is dose specific. The EPA's glyphosate fact sheet continues to push the myth that only exceedingly high levels of the pesticide pose any serious health risks.[48]

How factual are these claims or are they mere propaganda to obscure scientific truths far more deceptive and sinister?

Anthony Samsel is an independent research scientist working internationally in the interest of public health and the environment. He is a member of the Union of Concerned Scientists, and a former scientist and consultant at Arthur D. Little, one of the world's leading management consulting firms. Samsel has devoted much of his independent research on Roundup's toxicological characteristics and bioactivity. Through FOIA filings, he received a hoard of scientific documents, over 15,000 pages worth, covering Monsanto's complete glyphosate research. A review of the data has uncovered that the company had known for almost 4 decades that glyphosate is responsible for a large variety of cancers and organ failures.

In addition, Monsanto's studies confirm that low glyphosate doses were equally if not more toxic than higher doses. Samsel's observations were confirmed in a study published in the *Environmental Health Journal* by scientists at Kings College London and the University of Caen in France. The two year study found that glyphosate administered at an ultra low dose of 0.1 ppb (the EU's safety limit) in drinking water altered over 4,000 gene clusters in the livers and kidneys of rats. These alterations, the study reports, "were consistent with fibrosis, necrosis, phospholipidosis, mitochondria membrane dysfunction and ischemia." Low doses of Roundup were found to be far more toxic than the US EPA limits.[49]

During its years investigating glyphosate's bioactivity, Monsanto conducted hundreds of trials on mice, rats, beagle dogs, rabbits and other life. Aside from the diseases listed above, other cancers and diseases Monsanto's own research uncovered from glyphosate exposure include: adenoma cancer in the pituitary gland, glioma tumors in the brain, reticular cell sarcomas in the heart, malignant tumors in the lungs, metastatic sarcomas of the lymph gland, cancer of the bladder, thyroid carcinoma, basal cell squamous skin tumors, and others. In female mammals there were cancers of the lung, liver, thymus, stomach, bladder, adrenal glands, ovaries, colon, uterus, parathyroid and mammary glands.[50]

One of Monsanto's claims is that glyphosate doesn't bio-accumulate in tissues, rapidly biodegrades, and is excreted from the body readily.[51] Contrary to this claim, Monsanto carried out meticulous studies to determine levels of accumulation in the organs, tissues and cells glyphosate reaches. Glyphosate was radio labeled with carbon 14 and given in 10 mg doses to seven groups of animals, male and female. After 24 hours, the toxic chemical was found in the lungs and all body fluids: lymph, blood, urine and cerebral spinal fluid. Glyphosate also accumulated in the bone by 30 ppm and in the bone marrow by 4 ppm. Monsanto's studies were comprehensive. It found an accumulation of the chemical in red

blood cells, thyroid, uterus, colon, testes and ovaries, shoulder muscle, nasal mucosa, heart, lung, small intestine, abdominal muscle and the eyes. Moreover, when Monsanto convinces the public that glyphosate breaks down quickly, we are not told that the compound's metabolite byproducts are equally toxic and persist in the body and soil far longer.

Roundup's inventor, Monsanto is now largely a defunct corporation. After many thousands of lawsuits were filed against Monsanto due to glyphosate's carcinogenic activity, the company was purchased by the German mega-firm Bayer in 2018. As of May 2022, Monsanto paid out \$11 billion to settle over 100,000 cases. This was shortly followed by a Ninth Circuit court putting pressure on the EPA to reevaluate glyphosate's serious dangers to humans, animals and the environment.[52] In a Philadelphia case, the court awarded a plaintiff diagnosed with non-Hodgkin's lymphoma \$2.25 billion. Cases involving non-Hodgkin's lymphoma seem to be the primary ruling favoring plaintiffs although Bayer continues to deny any association. One study has shown glyphosate exposure increases a person's risk of the disease by 41 percent.[53] According to the Lawsuit Information Center, about 54,000 Roundup cases are still pending. Many of the settled cases were ruled on Monsanto's failure to provide known health warnings about their product.[54]

Conclusion

These examples only scratch the surface, although their human cost has been astronomical. The real corruption however should be leveled at the government and our federal agencies. Today, private corporations simply do what they do: generate profits. It is not public duty to hold private industry accountable. Government carries that mandate, and repeated failure to protect public health is unconscionable. The same holds true for not-for-profit medical organizations, such as the American Medical Association (AMA), who claim to uphold evidence-based science but repeatedly side with their corporate sponsors. The famous Tobacco Master Settlement in 1998 forced the tobacco industry to pay over \$206 billion over 25 years for covering up smoking's lethal dangers. Despite the industry's CEOs and executives knowing for decades about tobacco's addictive threats to public health, the government and AMA nevertheless protected the tobacco corporations' trade secrets for decades. Other examples of federal corruption jeopardizing human health includes the Department of Energy's full knowledge of uranium mining's dire health risks to tribal Native American with food and water contamination, and the continual support for synthetic hormone replacement for women, which increases women's risk of breast cancer by 30 percent.[55,56]

What is especially disgraceful is the failure of government, regulatory agencies and the medical authorities to apologize when proven wrong by public support for clear scientific evidence. Today, this cognitive disconnect from reality is just as systemic throughout federal agencies and private industry as was in 1972 when DDT was banned.

The promising news is that all of the government and industry propaganda about these toxic chemicals are increasingly being exposed as fallacious. As time passes, more and more research will inevitably emerge to damn the proponents of these products and further expose their deeper ulterior motivations to favor profit and war over health.

Although surveys show the American public is turning its back on industrial agriculture and war, too much is heavily invested in agro-biotech and military complexes for it to disappear quickly. We have become accustomed to expect ever-increasing new volleys of propaganda and fabricated lies from the US government whenever its policy positions and globalist

agendas are threatened. They always have an army of internal scientists at their disposal and compromised paid skills to concoct new bogus research to keep lawsuits and legal cases dangling within the courts. Therefore we can always expect to hear more scientific denialism and junk science coming out of the federal government and promulgated by major media pundits.

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Richard Gale is the Executive Producer of the Progressive Radio Network and a former Senior Research Analyst in the biotechnology and genomic industries.

Dr. Gary Null is host of the nation's longest running public radio program on alternative and nutritional health and a multi-award-winning documentary film director, including his recent *Last Call to Tomorrow*.

They are regular contributors to Global Research.

Notes

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