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Subject: **11/92 interview with Dr. Ernest J. Sternglass, author of *Secret Fallout***

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> **We know—and have long known—that radiation, especially strontium-90, goes to the bone and irradiates the bone marrow where the white cells are always formed that are the policeman in the body. If you weaken the police force and the cancers rise and new viruses come in, there are no defenses against them.**

The following is a transcript of a phone interview I conducted with Dr. Ernest J. Sternglass last November to discuss the ongoing story of suppressed information—known by the U.S. government since the late 1950s and early 1960s from studies conducted by U.S. government personel—about the health effects of low-level ionizing radiation generated by nuclear bomb testing as well as the routine, legal releases in gaseous and liquid form, by nuclear reactors, both commerical power plants as well as military and research reactors.

Ernest J. Sternglass is Emeritus Professor of Radiological Physics in the Department of Radiology, University of Pittsburgh School of Medicine. While he was there he was director of the Radiological Physics and Engineering Laboratory. He has carried out extensive studies on the health effects of low-level radiation and is the author of "Secret Fallout, Low-Level Radiation from Hiroshima to Three Mile Island," published by McGraw-Hill in 1981.

 (For those interested, a PostScript version of this file is available to generate "prettified" hardcopy output.)

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january, 1993

Dr. Sternglass agreed with my request to include his address and phone number for anyone who is interested in asking further questions about the serious nature of the subject matter he has spent the last three decades studying and trying to educate the public about.

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The following excerpts are taken from the complete interview which begins on page three:

. . . the atomic bomb project was always a secret project. It was born in the lie. The very first detonation at Alamogordo—it was announced that it was an ammunition dump that blew up. So it was a matter of public policy to deny and lie about the existence of the bomb, its manufacture, its health effects, and all the effects of fallout were classified secret until 1957 when Congress held hearings on the need to build bomb shelters. That's the only time when they were forced to come clean and talk about how to protect yourself from fallout, whose existence they had denied. It was only by accident that some Japanese fisherman aboard the boat the *Lucky Dragon* were dusted by some explosions in the Marshall Islands in the late fifties and that caused a huge outcry all over the world.

Until then all this was secret. In fact they did studies on animals as early as 1942, ‘43, ‘44 that showed that very small amounts of radioactivity would lead to low birthweight and crippled new-born dogs and rats. They knew all this. In fact they were actually planning that if the bomb should fizzle or if the bomb could not be built in time, that they would use the radioactive wastes from their reactors that made all the enriched uranium and plutonium . . . and spread it over Germany to kill as many people as possible. . . .

That’s all in a book that describes the whole atomic age. It details a story about the plans to use the strontium-90 that was being manufactured in the plutonium reactors to poison the water supplies in Germany (and also later on I suppose in the islands in the Pacific). The book is by Richard Rhodes and is called, *The Making of the Atomic Bomb*. It’s a comprehensive history of the whole thing. . . . In it is the story in which Oppenheimer and Fermi discuss the possibility of using all of this radioactive strontium-90 to kill as many Germans as possible. And in fact they were themselves afraid that the Germans, who were also trying to build nuclear bombs, would send missiles filled with radioactivity over to Chicago. They literally believe that what was called radiological warfare was going to take place.

In other words warfare with these fission products which are of course the most *powerful* biological weapons that man ever invented. So instead of just being an ordinary explosive like TNT, this is really a biological weapon and it it turns out to be far more deadly, a hundred-million times more deadly than any micro-organisms that you could put into the atmosphere. Because any other toxins are not nearly as insidious as strontium-90 going to the bone like calcium and then irradiating the bone marrow with long-range beta rays that cause a weakening of the immune system and then people die of all kinds of conditions.

They die of every kind of cancer because when the body is unable to fight these cells then naturally any type of tumor multiplies much faster. That has now been seen in the September 3, 1992 issue of *Nature*. There is a story that completely confirms that we were lied to about the enormous increase in cancers that would take place after Chernobyl. It shows that in the Byelorussia area just 100, 200, 300 miles north of Chernobyl where the fallout came down, instead of two or four children dying of thyroid cancer per year it increased to a maximum of fifty-*five* within only a few years. And that’s only the beginning. We haven’t even seen all the other cancers and therefore we are headed for an *enormous* economic and health crisis in all of Eastern Europe and I’m sure now that the recent downturn in economic productivity both in East Germany and Poland and Russia and many European countries, was vastly aggravated by the enormously unanticipated effect of the Chernobyl fallout.

. . . Oyster Creek is near Atlantic City and New Jersey and it affected all the vegetables and the food that was delivered to New York City. Another serious accidental release occurred at the Indian Point Nuclear Plant (which we only discovered earlier this year) that actually took place in ’85-’86 according to the Brookhaven National Laboratory’s reports about the releases. Those releases in ’85 and ’86 combined were equal to what was released from Three Mile Island and yet nobody was told about it. All this occurred right next to the water reservoirs of New York City and Groton, right near where the large amounts of water are stored that are shipped into the metropolitan area.

We have unwittingly destroyed our own health, and if we continue to do this—and this is the real tragedy—future generations will become increasingly weakened, increasingly unable to fight off infections and all the new bugs that are mutating more rapidly (as Sakharov warned). And we are seeing the return of an enormous increase in deadly TB (tuberculosis), many venereal diseases and of course we see the AIDS epidemic ravaging the world because a generation of young people, who are now twenty-five to forty-five, were born during the height of all this bomb testing, when 40,000 nuclear bombs were detonated in the atmosphere.

You can't do that and expect the world not to suffer the effects. And especially because we know—and have long known—that radiation, especially strontium-90, goes to the bone and irradiates the bone marrow where the white cells are always formed that are the policeman in the body. If you weaken the police force and the cancers rise and new viruses come in, there are no defenses against them. So many young people died at an enormously higher rate than ever before of diseases that were new. Often the bugs had mutated from relatively harmless varieties to much more deadly ones under the influence of all this fallout. So we see in our world today a rise in infectious diseases like a renewal of cholera epidemic, a renewal of the measles epidemic, a renewal of a huge rise in gonorrhea and syphilus and hepatitis and all the diseases that are related to chronic fatigue, believed to affect millions of young people. This is bound to affect our health and our productivity for decades to come and this is why we're in such deep trouble.

Phone interview with Dr. Ernest J. Sternglass, physicist and author of *Secret Fallout, Low-Level Radiation from Hiroshima to Three Mile Island*, (c) 1981 by Ernest J. Sternglass, McGraw-Hill Book Company.

November 11, 1992

DTR: The book, *Secret Fallout*, is an update, as of 1982, of your 1972 book *Low-Level Radiation* and you had said the story just keeps going on and on. Of course there has been much more that has happened from 1982 up to the present along this same line of story.

EJS: That's right—Chernobyl happened since then.

DTR: Chernobyl was the biggest one. I was just watching a recent Frontline program called "The Politics of Power" in which they had then-Department of Energy Secretary Admiral James Watkins saying "Nobody died at Three Mile Island. No one was hurt outside of the reactor building."

EJS: Well, that of course is a total lie and it's the same coverup that took place after Chernobyl in the Soviet Union where they claimed that only about thirty-one people died as a result of the accident. It's on the same level because all the governments felt it absolutely necessary to coverup the seriousness of the radioactive low-level releases that had taken place. These are of course low-level in terms of compared to what the fireman got and the people who were actually trying to fight the fires and contain the enormous disaster that took place.

But actually, Three Mile Island caused hundreds of thousands, in fact millions of people in the U.S., to be exposed to the fallout that drifted all across the northern United States and which, in the following year, continued with releases during the venting process when they had to enter the contaminated building. And in the process many thousands of children died prematurely as I documented in the last part of *Secret Fallout*.

Since then this has all been further confirmed by a detailed study published by Dr. Jay M. Gould and Benjamin Goldman called *Deadly Deceit* published by Four Walls Eight Windows in which they examined the mortality rates and the cancer rates around the areas of Three Mile Island and found that the closer you got, the higher was the change in total mortality. And in fact not just from cancers but all types of conditions including heart disease, chronic conditions of all types, infectious diseases—all the kinds of things that are now being seen also downwind from the Chernobyl accident extending for hundreds and even thousands of miles across Russia and to Sweden, all across into the United States and all around the world.

So what has happened really is that both the follow-up of Three Mile Island that is documented in *Deadly Deceit*, and the recent revelations by Vladimir M. Chernousenko, the Ukrainian theoretical physicist who was put in charge of trying to protect the people of Kiev from the Chernobyl fallout and trying to in some way help to prevent further disasters—this man wrote a book, *Chernobyl, Insight From The Inside*, just published by Springer (in Berlin and New York)—in which he reveals how the Soviet government for years afterwards kept people ignorant of the true effects of what had happened.

What Chernousenko describes is the enormous, terrible effects on human life. For instance all the hundreds of men who were asked to go up on the roof next to the damaged reactor on another unit and to shovel down by hand with shovels the extremely high-level radioactive uranium fission product-loaded graphite debris and other things that had been thrown out of the burning reactor at Chernobyl. All of these people died subsequently—hundreds of them—in the army who volunteered to do this to save their country.

They estimate there were something in the order of thirteen to fifteen thousand people out of six hundred to eight hundred thousand—almost a million so-called individuals who were sent in to clean up and build the concrete containment shell, or the sarcophagus as they call it, around this reactor. Out of those hundreds of thousands of military recruits from Estonia and Lithuania that were sent down there without knowing what was happening, they say now something in the order of thirteen to fifteen thousand are already dead and seventy thousand are dying and have very severe disabilities, many of whom are dying of cancers and heart diseases and infectious diseases caused by the enormous exposure, by inhalation and ingestion, of all this material.

As Chernousenko said, By vastly the greatest disaster that *ever* took place in human history, instead of only a few percent of the radioactivity—out of the hundreds of tons of uranium and graphite that were contained in this—that eighty percent of the major radioactive nuclides of the reactor core, like strontium-90, iodine-131 and cesium-137, actually escaped and covered the world. He said in fact his estimate is that for every person in the world, one curie of radioactivity was released. Now one curie is a million million picocuries and we worry about one picocurie in the milk.

DTR: What are their half-lives?

EJS: Cesium-137 has a half-life of about thirty years. That's why the entire area is poisoned for decades and decades. Chernousenko estimates that 100,000 square kilometers was made uninhabitable—not the 30 square kilometer Zone defined by the authorities as the only area of interest or concern. The *worst* situation is always intake from the diet.

In other words, you get a certain amount from the stuff lying on the ground. But the dose to the body can be ten to a hundred times greater to key organs, depending on what the chemistry is. You can have a ten to a hundred times internal dose when you eat the food grown on the contaminated soil. And that's what the people still have to do.

DTR: Because it keeps building up?

EJS: No, because it concentrates in the organs, chemically. In other words, strontium, instead of being uniformly distributed throughout the tissue, all goes to the bone. So it irradiates bone marrow *extremely* efficiently and that has never happened before from natural sources. So the internal doses from strontium-90 and iodine-131 are really devastating us. And it's just as true for releases from Rancho Seco and from all the reactors—all the doses they always mention that are so low—first of all they're not so low, they are generally in the few millirem range—but the dose to the bone marrow of a baby could be a hundred times greater because of the chemical composition and the concentration and the fact that the newly developing infant uses up and takes up the strontium so fast.

DTR: So the cesium is about thirty years for its half-life, but the iodine is only a couple of months right?

EJS: No, no—iodine is actually only a week. But there are short-lived iodines that happened in many reactor accidents that have a two-hour, ten-hour, six-hour, three-hour half-life. And since most people live within a half-hour of where the wind blows they inhale it, and if you inhale it you can get it. They don't even *count* those doses! They only count the doses for iodine-131 and longer half-lives (which is a week). So the short-lived isotopes aren't even properly counted.

This was all designed in order to allow nuclear bomb testing. Nobody cared about human health at the time—they lied, they deceived, they were so desperate in trying to use this weapon as a threat, they could not admit the serious biological character of it. That's the whole thing that we have to end. The real message is that it's not just a big accident that we have to worry about. It is the daily releases that are slowly killing us because of the logarithmic shape of the dose-response curve—the first five, ten, twenty millirems do most of the damage after which it reaches a plateau.

So that what happened there was equivalent to the detonation of hundreds of nuclear weapons. In fact the complete inventory in that reactor was equivalent of thousands, one or two thousand Hiroshima bombs.

DTR: For the releases that they would have made.

EJS: That is that eighty percent of this radioactivity escaped and distributed itself all over the world. It was like a complete renewal of nuclear bomb testing. And as a result, all over the world people began to notice effects on congenital defects in Sicily and then in Sardinia and Turkey—all this was reported in scientific journals like *The Lancet*—in southern Germany where the fallout was particularly heavy, there was an increase in newborn deaths beyond the normally expected trend.

This was seen even in the United States. Doctor Jay M. Gould and I published a paper in *Chem Tech*, in January, 1989 showing how the relatively small amounts of radioactivity that reached the United States produced a very significant increase in infant mortality in June and July of that year. Something like thirty percent increase above the previous year's middle of the summer in the south Atlantic states. And then there was an increase in total mortality over the previous year—between May and August of '86, right after the Chernobyl accident, compared to May-August, '85—there was as much as a five percent increase in the total number of individuals that died of all kinds of conditions. Mainly older people, mainly people who were already ill, or very young babies—the ones who have the least resistance or the greatest sensitivity. And it was directly correlated with the amount of iodine-131 that was measured by the EPA in the milk going only up to a maximum of about a hundred picocuries. But these effects were seen down as small as ten, twenty, thirty picocuries per liter in the milk peak value recorded all across the U.S. and yet this led to a clear increase. Something like forty thousand people died, in the United States alone, above normal expectations in the summer of 1986 after Chernobyl.

DTR: What is this publication, *Chem Tech*?

EJS: *Chem Tech*, is the journal published by the American Chemical Society, who asked us to write an article about this. This is on page eighteen to twenty-one. It indicates that the people who died, we looked at the causes of death in 1986 compared to the previous years and we found that the greatest increase was in AIDS-related deaths, individuals who were already ill, died much more quickly that summer by about almost ninety to a hundred percent more than over the previous year—not a small amount.

DTR: And then it tapered off after that?

EJS: Absolutely. It went down again. As a matter of fact the AIDS epidemic began to completely slow down after that—after this huge peak in 1986—it began to slow down. Then there was the other great cause of death which was infectious diseases and pneumonia—*not* related to AIDS. And that's what is even more disturbing is that there was a twenty percent increase over the previous years in the number of people of age twenty-five to thirty-four who were born during the height of nuclear bomb testing with weakened immune systems to begin with and they died at a twenty percent greater rate even than people over sixty-five who were born *before* the bomb test years and had better immune resistance.

So we're talking about an effect now, which we have been able to trace since then, that indicates that especially the younger generation, between twenty-five and forty-five, the ones who were born during the height of bomb testing in the fifties and sixties, they are the ones who are now dying at a *much* greater rate than in any previous generation in this country. And they are the people of greatest productivity.

But it was not just on humans that this happened—all over the world. We find the same effects took place in England and in southern Germany. The increases in infant mortality spread as far as Turkey and Finland and the Mediterranean. But it also affected animals.

In fact one of the more interesting stories in *Deadly Deceit* is the story about how Dr. DeSante, north of San Francisco in the Point Reyes Bird Sanctuary, discovered that young birds failed to hatch when the rains brought down fallout all the way half-way around the world north of San Francisco. Instead of the usual ten new young birds per one hundred birds that they expected, they found only four. It was a *very* significant decline. In fact, they couldn't understand it at all until somebody jokingly said It must have been the fallout from Chernobyl, and when they followed it up, sure enough everyone—and all the various ornithologists on the west coast all along in the wet areas—found that the birds failed to reproduce or had enormous loss of new young songbirds. Whereas in the dry areas of the Sierra where there was no rain—on the other side of the Sierra mountains—there was no effect on the birds. So they were able to tie it to the radioactivity that was brought down and even though the levels were of course much, much lower than in the Soviet Union, they were very serious in terms of the effect on the newborn. And that is always the greatest concern.

DTR: And that way of seeing it in California but not east of the Sierra is exactly what you saw with Alamogordo's test where the places that it went where is was wet,

EJS: Right, you can always tell where the rainfall was heaviest, [because rain literally washes the fallout out of the atmosphere and carries it down to earth —ratitor] that's where the babies died in the next few years. What is even more important is that we have now, in the last few years, been able to establish that the shape of the dose-response curve, in other words the risks as a function of the dose, is *not* a straight line, as people are now assuming, but is in fact a concave downward supralinear curve which means that at *very* low doses the effect is *much* greater per millirad—typically a thousand times greater—than at doses which are high.[1]

So that we have *grossly* underestimated the effect of these small distant fallout releases, or the releases from distant accidents, because we extrapolated linearly from high doses to low doses assuming, without evidence really until now, that there was a straight-line relationship between risk or effect and dose. And now we have examined the data around Three Mile Island, that was collected by a group at Columbia University and published in the last two years, which showed a large increase in lung cancer and other cancers and in leukemia. But it wasn't a straight-line relationship. It showed a very sharp rise at very low doses for those who were least exposed and then leveled off for the ones who were more heavily exposed.

So that they concluded it isn't what we would expect on the basis of a linear relationship so they said it must be due to something else. But nevertheless there was this huge increase in cancers and childhood and other older leukemia cases around Three Mile Island that was discovered. And again supporting the findings that I had originally made on the newborn infants back in the late part of 1979 and early 1980 after the accident at Three Mile Island.

Another thing that we've done since the time that *Secret Fallout* was published is that we investigated the cancer and infant mortality situation in Switzerland following the arrival of the huge bomb fallout from the Russian tests in 1961-62 that came down primarily on the mountain tops where the snow collects. This is where all the great rivers of Europe originate like the Rhine and the Danube and the Po River in Italy. This fallout from the Russian tests was laced with strontium-90 and cesium-137 and Switzerland had the highest measured concentration in the world. Even higher than in the United States during the time of nuclear bomb testing.

DTR: Now why would that go west? Just because in the general land mass it would be picked up in the place that had the highest mountains in Europe which would be around Switzerland? I would think the jet stream would carry it east.

EJS: Actually what happens for the Russian tests in the southern area of Kazakhstan, they fired their tests whenever it was possible to make sure that it would not go towards Alma-Ata which was to the south. The actual winds in Siberia circulate from the north and then they turn generally to the southwest and carried it into Afghanistan and Iran, Iraq, that carried it into the Mediterranean areas and Turkey and then into the Caucasus Mountains and also to Switzerland.

DTR: What is this place Alma-Ata?

EJS: It's to the south of the Russian bomb-test site right near China. I've been there. I saw it. I went to the bomb-test site. I saw the people who looked to me to be seventy-eighty years-old, but who said they were forty.

DTR: Which is the same as what Dr. Rosalie Bertell describes in her coming to understand early on how exposure to radiation increases aging.

EJS: It is in effect, the same thing, as what aging is and most of our aging process is probably due to natural radioactivity around us. So when we greatly increase the background radioactivity we're increasing the aging rate of the population. That means people die sooner. That people get sick sooner and they die of cancer sooner. They die of other immune deficiencies and chronic diseases sooner. So that's what we're doing to ourselves if we continue in this direction.

DTR: So Switzerland had very good measurements?

EJS: Everyone in Europe had good measurements on strontium-90 during the late 1950s and 1960s. Switzerland had the highest recorded levels. Of course they also got the fallout from the stratospheric tests in the Pacific which circulated around the globe and rainout wherever there are high mountains.

So they got it all. Furthermore they got it from the French nuclear plutonium processing plant in southern France in the Provence which also went over the Alps and continued to rainout in Switzerland and Italy.

So we found that there was a complete upward change in total mortality in cancer rates and a halt in the decline of infant mortality just as we had seen, and as I described in *Secret Fallout*, in the United States. But more than that, when their boiling water reactors (which are actually of General Electric design), and their presurized water reactors (which are Westinghouse types), when they had accidents and all these were reported in the Swiss data in great detail, we could see that within the next few years there was a rise first in infant mortality and then leukemia and then cancer rates—breast cancer especially was very clearly increased. So were other chronic conditions like diabetes and other causes of chronic diseases like kidney diseases and heart disease. This all was completely countering the previous trend during the forties and fifties when Switzerland was relatively spared from the early Nevada tests. So that was another confirmation of what we had seen.

Then much more recently, about two years ago, we examined the cancer rises around the Oregon reactor near Portland called Trojan. It too showed very much the same pattern that cancer rates suddenly rose by twenty to forty percent within the next ten or fifteen years after the reactor had a very large fuel failure (it started in the seventies) in the early part of the eighties and by the end of the eighties cancer rates had risen *very* significantly and there was no other explanation. Leukemia had risen in the nearest county that contains Portland and declined with distance away, whereas the rest of the United States declined in leukemia mortality during those years.

DTR: When was that accident?

EJS: I have it right here in *Deadly Deceit*: the start of Oregon reactor, the Trojan reactor, was in 1975 and the leakages began in ’80, ’81, were particularly high in ’81 and ’82, and then they repaired and put new fuel rods in and then it declined somewhat. But the cancer rises were enormous. Let’s see, the actual figures were from 168 per 100,000 up to 210 and that was a twenty-seven percent increase in just a period of fourteen years where previously between 1970 and ’74-’75 it was completely flat between 165 and 169.

So then we found again increases in other conditions known to be related to the immune system such as asthma mortality which has been rising unexplained in this country since the mid-seventies everywhere. Now from the study of the Oregon reactor we can now see why because the immune weaknesses and abnormalities that lead to allergies and asthma have been documented during the time of nuclear bomb testing especially in the areas of the Pacific and the eastern Pacific and in the west coast of the United States.

So it’s really an enormous impact on human health that is now evolving. In fact, as it was shown in *Deadly Deceit*, something like 9 million people in the United States must have died above normal expectations based on the trend of steady decline in mortality rates since the beginning of the century.

DTR: Starting when—after the testing began?

EJS: After 1951-52, especially when the hydrogen bomb tests began because they produced *thousands of times* as much fallout per explosion as these small bombs that were used *before* 1952. Because "megaton bomb" means a thousand kilotons and the Hiroshima bombs were only on the order of ten or fifteen kilotons. So we’re talking about ten megaton bombs. In fact the Russians detonated a fifty-sixty megaton bomb in 1961, that’s 500 to 600 *times* the amount of fission products released from the Hiroshima bomb in a single bomb, that broke the moratorium actually. That was one of the worst and most tragic, terrible things to do.

As a matter of fact it was Sakharov who had warned Kruschev not to explode any further megaton bombs because he had calculated that for every megaton detonated anywhere on the globe there would be between ten and twenty thousand future deaths—*anywhere*, no matter *where* the bomb was exploded.

Since then we’ve completely confirmed Sakharov’s estimate—in fact it’s actually underestimated by a factor of two to five—so that the deaths when you include all the subtle effects of being born underweight, which then leads to all kinds of early problems like congenital defects and learning disabilities, we detonated—and we literally had a nuclear war because most people don’t realize this—but we detonated the equivalent of forty *thousand* Hiroshima-sized bombs in the atmosphere.

DTR: "We," just being the United States?

EJS: The United States and all of the nations in the world together, by the end of 1980, with the last nuclear bomb test by China in the atmosphere, the Natural Resources Defense Council estimates that the equivalent that 40,000 Hiroshima bombs were detonated in the world.

DTR: Both aboveground as well as underground?

EJS: Most of them were aboveground and most of the ones that were often done so-called underground tests were really near-surface tests. And most of the radioactivity actually escaped. So that the idea that most of the so-called "peaceful" tests that were tried in the sixties, it turned out, were really designed to continue military testing by both the nations. Russia did even more than we did in these so-called "peaceful" nuclear tests. It was just an excuse to keep testing. They were digging large craters and exploding them to create surface water reservoirs, and all kinds of crazy schemes, and hundreds of these explosions took place in the United States and Russia and in Russia they took place all over the landscape in dozens and dozens of different locations—not just in one single test site.

So that the entire nation was contaminated with radioactivity at low levels and this has contributed enormously to the increase in infant mortality—the improvement in the decline in infant mortality in Russia essentially ended and reversed itself in the early seventies. In fact it was so bad that they stopped reporting infant mortality anymore and not until Gorbachev came in did they begin to publish them and then, at the recent conference in Berlin, I saw some of the Russian scientists who had plotted this and they said there were clear huge increases during the time of the Russian bomb tests, especially in the Moslem areas in the smaller republics of Kazakhstan, Turkestan, and Tajikhstan and all those smaller nations that bordered on China and were close to the southern rim of the Soviet Union where the heavy fallout came down in the mountains.

So that everything that we had found in the United States has now been completely duplicated in Russia. They now have the freedom to talk about it, as they did at the meeting which I just attended in Berlin on September 20-25. I was there and some hundred former Soviet scientists came and gave us all the data and statistics that they were able to get so far. It showed an enormous human suffering in the test sites and far away from the test sites, everywhere where the diet and the water and the milk was contaminated.

So the world has really experienced not just a cold war, but it was a war in which millions of people have died quietly in hospitals without knowing what was happening to them.

DTR: A hot war that was unannounced or undescribed.

EJS: Absolutely. It was a tragic situation that, driven by fear and hatred and the desire to control the world, the two major powers essentially destroyed their own health and their own economies. And we now see the effects.

It's very clear that the huge recent rises in cancer rates—especially breast cancer which has risen something like forty percent for women over fifty since the early seventies—it's about 1975-76—when the giant reactors began to release *huge* amounts of radioactivity. In fact many of them released more than at the time that the Three Mile Island accident occurred.

Reactors like Oyster Creek released—according to the official announcements—three, four, five times as much Three Mile Island and all these radioactive materials drifted across the entire northeastern U.S. It's the northeastern U.S. that is now suffering this enormous decline in health and the huge rise in insurance rates and medical costs. Governments are going broke because medicaid is rising at 28-29 percent per *year* in many of the states of the northeast and the states can not afford it. They can't find the money for all the welfare and medical costs.

So the *enormous* cost of the cold war is only *now* coming home to roost because many of these effects occurred ten, fifteen, twenty years *after* the events.

DTR: Where's Oyster Creek?

EJS: Oyster Creek is near Atlantic City and New Jersey and it affected all the vegetables and the food that was delivered to New York City. Another serious accidental release occurred at the Indian Point Nuclear

Plant (which we only discovered earlier this year) that actually took place in ’85-’86 according to the Brookhaven National Laboratory’s reports about the releases. Those releases in ’85 and ’86 combined were equal to what was released from Three Mile Island and yet nobody was told about it. All this occurred right next to the water reservoirs of New York City and Groton, right near where the large amounts of water are stored that are shipped into the metropolitan area.

We have unwittingly destroyed our own health, and if we continue to do this—and this is the real tragedy—future generations will become increasingly weakened, increasingly unable to fight off infections and all the new bugs that are mutating more rapidly (as Sakharov warned). And we are seeing the return of an enormous increase in deadly TB (tuberculosis), many venereal diseases and of course we see the AIDS epidemic ravaging the world because a generation of young people, who are now twenty-five to forty-five, were born during the height of all this bomb testing, when 40,000 nuclear bombs were detonated in the atmosphere.

You can’t do that and expect the world not to suffer the effects. And especially because we know—and have long known—that radiation, especially strontium-90, goes to the bone and irradiates the bone marrow where the white cells are always formed that are the policeman in the body. If you weaken the police force and the cancers rise and new viruses come in, there are no defenses against them. So many young people died at an enormously higher rate than ever before of diseases that were new. Often the bugs had mutated from relatively harmless varieties to much more deadly ones under the influence of all this fallout. So we see in our world today a rise in infectious diseases like a renewal of cholera epidemic, a renewal of the measles epidemic, a renewal of a huge rise in gonorrhea and syphilus and hepatitis and all the diseases that are related to chronic fatigue, believed to affect millions of young people. This is bound to affect our health and our productivity for decades to come and this is why we’re in such deep trouble.

DTR: When you said Oyster Creek released more than Three Mile Island, how were you able to determine the levels?

EJS: Well, it so happens that in this country the NRC (the Nuclear Regulatory Commission) required the publication of the amounts released per year and this was published by the Brookhaven National Laboratory. And that’s an annual report that’s available to the public.

DTR: So you were able to get their figures.

EJS: Absolutely. Their *own figures* showed it—and that doesn’t even show all the small accidents that were not recorded and all the other releases that went out with steam rather than through the monitored stacks. So we’re dealing with enormous contamination of our environment and that is why the government has been so adamant about remaining secret and denying it all trying to blame it on ordinary chemicals, trying to blame everything on DDT, on pesticides, on every other possible material because they have been the worst polluters. In our world today, the governments are the worst polluters—not the chemical industry.

DTR: Oyster Creek is a newer kind—you said is a larger reactor?

EJS: It’s the large reactor that was one of the first built by General Electric—a boiling water reactor with only a single loop—and it had many, many terrible problems with large exposures to the workers recorded. Many of the workers died prematurely. I testified in two cases involving workers who worked there. Their own data shows that they had enormous problems of corrosion and leakages and faulty fuel elements and troubles in their chemical cleanup systems. All this resulted in enormous releases.

The largest single release in a single year that ever occurred, occurred actually at the Millstone reactor in Connecticut right near New London where in 1975 they released millions of curies of radioactive gases. We since then have seen a huge increase in cancer rates about which I made a report for Representative

Anderson from Connecticut (he's now serving in the Senate). He had asked me to look into this. We studied the releases. They were all available. Because in our country you can get this information by simply going to the local depository where the records have to be kept. All this was sent to me, along with the statistics of Connecticut, and it showed that the cancers rose most in the towns nearest the reactor and declined with distance away in all directions.

Now in the last few years we see an *enormous* increase in breast cancer on Long Island. In fact the eastern tip of Long Island is just opposite this reactor—it's only twelve miles away. Naturally whenever they had a release, they didn't want to release it when the wind was towards their homes, so they released it when it blew away from shore. When it blows away from shore it goes over to Shelter Island and Eyeslip (sp?) and all the towns in eastern Long Island and that's where there's such an enormous rise in breast cancers is today.

Only last night CBS had a story about this on the evening news. The women are desperate. They're trying to find out what the cause is. They suspect some local kind of chemical but the state health authorities told them there is no basis for any abnormal concern and they should stop being concerned. But the trouble is that the actual figures show that Long Island not only had *more* cancers than any other area in the eastern United States, but that it was more cancers the *further* you get away from the pollution of New York. So it can't be blamed on ordinary automobiles. It can't be blamed on benzene. It can't be blamed on chemicals and they haven't been able to find any other explanation.

But naturally the state government of New York, which operates two nuclear reactors actually (one at Indian Point and one near Oswego, near Syracuse), the governments are locked in to their lies because, same as the Russians, they had to deny that all these effects are due to these reactors for fear of enormous lawsuits, for fear of having to shut down all the nuclear plants. The aim of our government has to been to keep the nuclear reactors and the nuclear energy establishment going regardless of how many people they're killing.

DTR: CBS didn't make any of that connection right? They just said there was a lot of cancer.

EJS: No. CBS said that it was an unexplained huge rise in lung cancer, that the women are protesting, that they have gone to their congressmen and are demanding action, and that they're desperate. They want to know *why* they're dying like this.

[someone called and Dr. Sternglass put me on hold for a moment.]

EJS: This is ironic, you know who just called me?

DTR: Who?

EJS: The lawyer who is working for the downwinders at Hanford. Who is pursuing the cases of all the people who were *deliberately* exposed to *huge* amounts of radioactive iodine that were released and human experiments to see how far the iodine would be carried and how seriously it would effect the environment.

DTR: In the fifties?

EJS: That all was done in the late forties and early fifties. These people, so-called "downwinders," are now suing because so many of their families were decimated by cancers and all kinds of chronic diseases and congenital defects by an enormous level and so they're trying very hard now to make sure that this will never happen again. The only way to do that is to try to bring suits to force those who did these experiments to pay financially for the compensation of all the horror that they accomplished.

DTR: And of course these kinds of suits have been attempted for decades.

EJS: Right. And of course one of the major suits was won by one of the downwinders in Utah who brought a suit and which was decided in their favor and they were awarded damages. Although it was reversed on a technicality on a higher level, nevertheless congress has now passed laws that do give compensation of some small amount to *some* of the cases of cancer and leukemia in the Utah and Nevada areas.

But of course *nobody* has ever considered giving compensation for the people in St. Louis, Chicago and New York, who died from the same fallout clouds when heavy rainfalls occurred, as described in my book, *Secret Fallout*.

DTR: —or much less anyone living downwind from a nuclear plant.

EJS: Certainly that would be the last and major disaster for the insurance companies if they were forced to pay. As a matter of fact most people don't know that over two *thousand* cases of claims against the operators of Three Mile Island have been *paid off*—have been settled quietly—without lawsuits because they *didn't* want a lawsuit that would set a precedent.

DTR: And they were afraid that they really would lose the suit if it went to court.

EJS: And they would lose the suit because of all the mounting evidence. So *thousands* of these lawsuits have been settled—some of them for *millions* of dollars—although the amounts have never been fully announced and there's no question that the effort has been made, again, to coverup completely the enormous true health impact of Three Mile Island. That's the only way the government can continue to say that nobody died after Three Mile Island. It's just like the Russians said, nobody outside the fireman and the workers who worked on the plant (thirty-one) died at Chernobyl. As Chernousenko shows in this incredible book, these are complete lies, the kind of lies that were needed in the cold war to protect the atomic establishment.

DTR: As far as all these lies go, the real body that is maintaining this is the government agencies that are directly tied financially with their own agendas and interests—they're the only ones who could have afforded both the coordination of all the people as well as of all the finance.

EJS: Well they had to because the atomic bomb project was always a secret project. It was born in the lie. The very first detonation at Alamogordo—it was announced that it was an ammunition dump that blew up. So it was a matter of public policy to deny and lie about the existence of the bomb, its manufacture, its health effects, and all the effects of fallout were classified secret until 1957 when Congress held hearings on the need to build bomb shelters. That's the only time when they were forced to come clean and talk about how to protect yourself from fallout, whose existence they had denied. It was only by accident that some Japanese fisherman aboard the boat the *Lucky Dragon* were dusted by some explosions in the Marshall Islands in the late fifties and that caused a huge outcry all over the world.

Until then all this was secret. In fact they did studies on animals as early as 1942, '43, '44 that showed that very small amounts of radioactivity would lead to low birthweight and crippled new-born dogs and rats. They knew all this. In fact they were actually planning that if the bomb should fizzle or if the bomb could not be built in time, that they would use the radioactive wastes from their reactors that made all the enriched uranium and plutonium,

DTR: —up in Hanford,

EJS: In Hanford and spread it over Germany to kill as many people as possible.

DTR: That's in some documentation that you've extracted, or

EJS: That's all in a book that describes the whole atomic age. It details a story about the plans to use the strontium-90 that was being manufactured in the plutonium reactors to poison the water supplies in

Germany (and also later on I suppose in the islands in the Pacific). The book is by Richard Rhodes and is called, *The Making of the Atomic Bomb*. It's a comprehensive history of the whole thing published by Simon and Schuster, New York. In it is the story in which Oppenheimer and Fermi discuss the possibility of using all of this radioactive strontium-90 to kill as many Germans as possible. And in fact they were themselves afraid that the Germans, who were also trying to build nuclear bombs, would send missiles filled with radioactivity over to Chicago. They literally believe that what was called radiological warfare was going to take place.

In other words warfare with these fission products which are of course the most *powerful* biological weapons that man ever invented. So instead of just being an ordinary explosive like TNT, this is really a biological weapon and it it turns out to be far more deadly, a hundred-million times more deadly than any micro-organisms that you could put into the atmosphere. Because any other toxins are not nearly as insidious as strontium-90 going to the bone like calcium and then irradiating the bone marrow with long-range beta rays that cause a weakening of the immune system and then people die of all kinds of conditions.

They die of every kind of cancer because when the body is unable to fight these cells then naturally any type of tumor multiplies much faster. That has now been seen in the September 3, 1992 issue of *Nature*. There is a story that completely confirms that we were lied to about the enormous increase in cancers that would take place after Chernobyl. It shows that in the Byelorussia area just 100, 200, 300 miles north of Chernobyl where the fallout came down, instead of two or four children dying of thyroid cancer per year it increased to a maximum of fifty-*five* within only a few years. And that's only the beginning. We haven't even seen all the other cancers and therefore we are headed for an *enormous* economic and health crisis in all of Eastern Europe. I'm sure now that the recent downturn in economic productivity both in East Germany and Poland and Russia and many European countries, was vastly aggravated by the enormously unanticipated effect of the Chernobyl fallout.

DTR: Which is now only six years old.

EJS: Thats right. And typically leukemia peaks six to seven years *after* irradiation as has been established by Dr. Stewart and discussed in my book. And in fact in the United States, a study just published recently by the National Cancer Institute called "Cancer Review, 1973-1988," there are tables that show that cancers of every type increased enormously since the mid-seventies, or since the large releases occurred from Oyster Creek and Millstone and then Three Mile Island.

All these things affected the entire northeast coast which has the heaviest, largest population, and the peaking in the breast cancer for instance occurred in about 1987. Now actually in the last two to three years it's began to come down again. It cannot be explained by improved diagnosis, it cannot be explained by anything else. But a government that is desperate financially to prevent lawsuits and wants to protect the nuclear industry and its ability to keep nuclear weapons and threaten with them, that kind of a government will let its own people die rather than admit the seriousness of the situation.

DTR: This "Cancer Review," is that the name of the magazine or,

EJS: No, "Cancer Review" is a report issued by the National Cancer Institute. It's something that everyone should know about about but it exists and it has not been widely publicized, unfortunately. It is a big thick report (about 2 inches thick), very detailed, and gives both cancer mortality rates by state, and it gives cancer incidence for ten percent of the population. In other words reporting not the deaths but the diagnosis of cancers. This completely confirms what I have been saying and what many others like Dr. Gould and Dr. Gofman and now others have been saying.

The report's exact title is called "Cancer Statistics Review, 1973-1988" and the citation, the reference is "Ries et al.," etc., there are about five authors, published by the National Cancer Institute, NIH publication number 91-2789, 1991. It's available publically from the U.S. Department of Health and Human Services. It shows this enormous rises in cancer, I'll just give you some idea of the typical values of what happened.

For instance, let's take what happened to something like—well of course a giveaway is that childhood leukemia and cancer, in Table V-30 and V-31, ages zero to fourteen, the incidence of childhood cancers and leukemias rose seventeen percent between 1979-'80 and the peak six years later in 1985. *Exactly* what happened when Dr. Stewart examined her cases of childhood leukemia. It typically takes a six year delay. And then the breast cancers rose by much more. The typical breast cancer rate increased by as much as forty percent between '79 and '87 in just a few, eight years. That was, say for the older women, something like thirty percent, thirty-five percent for the younger women. But until recently no such vast increase had *ever* been reported in the United States.

DTR: And that would have been though, from a lot of years and a lot of combinations of the effects of both bomb testing as well as then the power plants.

EJS: That's right. There's a long-range thing that of course is the delayed effect of the bomb testing that ended in 1980. But until 1980 French and the Chinese bomb test fallout continued to fall on our east coast. Whenever it rained heavily and even on the west coast whenever it rained heavily it generally moved across Alaska, down the west coast, across the Gulf of Mexico, and up the Atlantic coast. That's the typical path of much of the Chinese fallout. And when it encountered rain clouds it would rainout.

So it's the combination of all the following things: the continued underground testing in Nevada that had many releases; the Chinese fallout all through the seventies and eighties; the large accidents like those at Savannah River that were unreported but described in *Deadly Deceit* in the 1970s; the accident at Three Mile Island in '79 and the venting in '80; the *huge* releases from Oyster Creek and Millstone in the early '70s

DTR: —which were just normal releases

EJS: —which were normal releases and which were permitted at the time under the early regulations. Later on they tried to improve the gas trapping system on these reactors by installing more filters and more hold-up time to allow the radioactivity to decay. But in the early seventies these reactors were *allowed* to emit enormous amounts of radioactivity both into the air and to the water.

Long Island sound for instance, we calculated that the liquid releases from the Millstone reactor failures in the 1970s accounted for something like sixty to seventy percent of *all* the liquid releases of radioactivity in the United States. And its been killing Long Island Sound. And of course the people eat the fish and the oysters and don't know what's happening. This liquid causes diseases among the fish and the oysters and they die off. In addition the reactor gases produce an OX in the atmosphere, that is, a combined nitrogen and oxygen into nitrates, and these go and, like fertilizer, cause the algae blooms.

So we have an incredible, huge effect—not only on humans, but on fish, on birds, on the entire environment because of these *incredible* releases of radioactivity—of 40,000 bombs-worth of radioactivity and the continued operation of these dirty reactors and the continued chopping up of the fuel in order to recover plutonium. Which is just what happened now—the French have produced one and a half tons of plutonium that is now on it's way to Japan and in the process of doing it they had to chop up huge amounts of uranium fuel and release all the krypton-85 and all the zenon-137 into the stratosphere.

That alone is another effect about which I talked in Berlin. It creates ozone problems. On the ground it produces ozone because radioactivity, like ultra violet and like sunshine, causes ozone to be produced. That combines with the automobile and chemical exhaust to create smog and acid rain from the sulfur in the atmosphere. The SO2, converting it to SO3.

Then when the gases finally rise after a year or two and reach the stratosphere, then they accelerate the destruction of the ozone by the chlorofluorocarbons. In fact it's been established by studies at M.I.T. in the last few years that the process of destruction of the ozone is vastly accelerated by ice crystals forming in the stratosphere. These ice clouds act catalytically to destroy the ozone much faster than it would in the absence of ice clouds. Then an article appeared only within the last six months in *Physics Today*, in which the authors report that cloud formations is known to be induced by radioactive gases. Just like in a cloud chamber, one can see the tracks of fast atomic particles by the condensation of little cloud droplets from the moisture in the atmosphere.

So that what we're creating you see is instead of nuclear reactors helping and fighting the ozone hole, it now looks as if it is helping to *accelerate* the *destruction* of the ozone hole. And again the nations of the world do not want to admit this because France was just paid four *billion* dollars for producing the plutonium that is now on its way to Japan. The British are in the process of expanding Sellafield so that they can process more of the uranium that's being mined by Rio Tinto which is one of the largest uranium mining companies in the world and it's owned by the Queen of England. So there is *every* incentive to lie and coverup to protect the wealth of the British crown. The same is true of many of the banks of Europe and the United States that invested in uranium and they will do *anything* and fight *anybody* and lie and coverup in order to protect these tens and hundreds of billions of dollars of investment in uranium and uranium processing facilities.

DTR: So there's all of this financial interest tied up here, and, as far as governments who are the final controllers, up to this point, attempting to say to everybody, No problem here. Everything's O.K. This is very safe. Etc., etc., etc.

EJS: They have to because they were doing the detonation of the bombs. It was the governments—the British government and the U.S. government that encouraged and in fact forced uranium mining to be greatly increased in order to build all of the bombs. So once you've gotten into the uranium business and invented and invested so much money, you certainly want to realize the profits from it.

DTR: And of course now with all the bombs that are being dismantled, there's that much more plutonioum,

EJS: There's more plutonium and more enriched uranium available that could keep reactors going for another ten or twenty years even without any mining. So we're faced with a situation where the world is now experiencing the after-effects of a horrible cold war.

DTR: What I'm curious about is people that I talk to today, they're not necessarily uninformed but clearly this information is not being spread around, people think "Oh, well the cold war is over. There's not really any danger of bombs anymore because they're dismantling the bombs

EJS: —that's not true—

DTR: and new power plants haven't been able to be constructed anymore what with the slow-down in construction and drop in licenses being granted. And there's this general conception that Well, but all of that's going away.

EJS: —The problems are over, right. In fact the problems are much worse. The total production of uranium has greatly *increased* in the last five or seven years over the period during bomb testing; the total amount of radioactive krypton is four or five times what was discharged by the bomb testing.

DTR: In terms of what?—nuclear power?

EJS: In terms of nuclear power and the production of plutonium for further use. The reprocessing of it for weapons and for the plutonium that is being shipped to Japan. That krypton-85 vastly exceeds anything that was liberated during the time of bomb testing. So it's actually the continued reprocessing and the manufacture of the plutonium for Japan and other countries that want to recycle their fuel—chop it up and recover the plutonium—that is continuing to destroy our atmosphere.

DTR: And it' being stepped up if you're saying that the release of krypton-85 is a side-effect that,

EJS: It's exponentially increasing. It's been *increasing* exponentially since the end of bomb testing. There was a brief period in the early seventies, before all the large nuclear reactors started to operate, that it had leveled off and was going to disappear because it has a half-life of something ten years, a decade or so, and it would have cleaned itself up if it hadn't been for the startup of the civilian reactors. There are now four hundred of them operating all over the world and many of them are even dirtier than our presurized water reactors. The Russian reactors only have a single loop and the boiling water reactors built by GE only have single loop and all this means that a *lot* of radioactivity is discharge with the steam right into the turbines and then often discharged from these turbine buildings.

DTR: So the increase, which people aren't aware of, it seems the only way that this really can be turned around is by people becoming informed,

EJS: that's all,

DTR: that they understand the real costs of what all this is,

EJS: That's right—the real cost is the destruction of one generation of young babies after another. Because the latest piece of evidence that we were able to obtain—that nobody's ever done before—we went to the U.S. Vital Statistics (Dr. Jay Gould and I), and we collected all the numbers on the number of babies born under twenty-five hundred grams or five and a half pounds. Since 1950 this data has been published for every state, by race, etc., for every state in the United States. And we plotted it up—put it into the computer and brought up all the graphs. And there we saw a *gigantic* spike for the kids of Nevada in 1951. It went up seventeen percent in a single year.

DTR: What went up?

EJS: The number of babies born underweight in Nevada went up from ten percent to seventeen percent and then declined again when they stopped the bomb testing and changed the way they were doing it so that they would only detonate the bombs when it was blowing away from the big cities like Reno and Law Vegas. So after that it went down somewhat but there was a *second* spike in the second big test series in Nevada in 1962 after the moratorium. Then again there were further spikes during the so-called "peaceful bomb testing" until 1970 when they had the Baneberry accident and only then, after that, they stopped testing altogether for six months and then they only allowed a few deep underground tests and sure enough, the number of babies born underweight declined sharply and in fact by 1979-'80 reached the levels of the rest of the United States.

DTR: In Utah as well.

EJS: All around we saw the same pattern in Arizona, in Utah, and for the country as a whole. But nearly not as strong as we saw it for Nevada. But we saw it as far away as Washington D.C. because it drifted all across the United States. We saw the peaks and again the effect on the non-white population, on the Indians living in Arizona and Nevada and Utah, was much greater than on the white population and all this is documented and will be published in a new book that Dr. Gould and I are working on and hoping to publish next year.

DTR: Regarding all that then—this pamphlet from this nuclear energy lobbying group in D.C. [the U.S. Council for Energy Awareness]—I went through it and we've already cover a couple of the points that they try and make which are complete fallacious.

EJS: Absolutely. In other words they tell you that it's clean, that nothing comes out, and of course the Brookhaven National Laboratory reports on the releases of nuclear radioactivity into the atmosphere completely counter this and in fact even the United Nations Scientific Committee on the Effect of Atomic Radiation (UNSCEAR) back in the 1962 and 1965 editions showed that the *external* doses, just from certain reactors like Dresden and Big Rock and others all over the country were sometimes twenty, thirty, fifty millirads—not the .001 millirad that they claim. And these are only the *external* doses, *not* the doses that you get from the drinking water and not the doses that you get from the milk that is contaminated.

DTR: Which builds up as you consume more.

EJS: Well it not only builds up, but it actually is a greater dose because these chemicals concentrate in certain organs so that the bone marrow might get ten or twenty or fifty times as much radioactivity as you would measure on the ground. So the doses are *vastly* greater than the nuclear establishment wants you to believe. Of course that's what their big lie is, they say, Since nothing comes out all these increases in cancers and infant mortality must be due to something else.

DTR: Look somewhere else, don't look at us.

EJS: Exactly.

DTR: Now, let me go through a couple of these. They say, "The plants do not pollute the air with sulfur dioxide, nitrogen oxide, dust or "greenhouse" gases like carbon dioxide."

EJS: Which is correct.

DTR: O.K., exactly—as far as it goes, that's right,

EJS: But what they don't say is that it releases huge amounts of iodine-131, strontium-90, strontium-89, and a *million* times more krypton and zenon which is destroying the ozone layer.

DTR: O.K., here's Lie # 1: "Nuclear power plants do produce radioactive waste by-products, but these wastes post no threat to the environment."

EJS: Well that of course is just totally ridiculous. Because we already have had enormous releases from these reactors that are now destroying human health everywhere, as Chernobyl and Three Mile Island are examples, where the fallout reached large populations and these are the wastes that they release into the atmosphere and into the liquid in addition to the solid waste and the other wastes that they ship to various waste sites.

DTR: Lie # 2 is, "A nuclear power plant cannot explode."

EJS: Well it did of course. It did in fact in the case of Chernobyl and we nearly had similar explosions in some of our own reactors in this country. We had a meltdown within the reactor that just by the grace of God failed to penetrate the steel vessel at Three Mile Island. And huge amounts of radioactivity have been discharged in the clean-up since then.

DTR: Lie # 3: "No one was injured or died as a result of the Three Mile Island accident."

EJS: We now estimate a few hundred thousand people have already died as a result of Three Mile Island and that in the United States *alone*, forty thousand people died from Chernobyl *thousands* of miles away. We believe—and Doctor Gofman and I agree—that *millions* of people will eventually die from the Chernobyl accident, prematurely.

DTR: Over time.

EJS: Over time. Over the next twenty-thirty years.

DTR: They mention the Institute of Nuclear Power Operations. What is that organization, I’ve never heard of that one.

EJS: It’s a private organization organized by the industry in order to train their operators better. They go around and look at the various reactors and issue internal reports warning the utilities about bad practices in order to be able to prevent another Three Mile Island. It’s a self-preservation technique and that’s what they’re trying to do. But unfortunately these reports are not publically available.

DTR: So there is information in the reports that is damaging but they’re not,

EJS: Oh yes. In fact I had an occasion to see one in Syracuse just a few years ago and it was extremely damaging because it pointed out all the defects at a certain plant up there called the Nine Mile Point Plant. It is clear that if these reports are released to the public and fully explained that there would be an outcry for stopping these reactors immediately.

DTR: And as they say, "All the medical and scientific evidence gives nuclear power plants a clean bill of health." And of course that’s all the reports that they chose to cite or that haven’t been suppressed.

EJS: Absolutely. Sure. Because the government is desperate and has always been desperate to protect its ability to build bombs which requires the operation of nuclear reactors and which requires us to keep the permissible discharge limits very high so you can continue to do underground testing in Nevada, and to have plants operate all the time. This has been going on for decades and people didn’t know about it.

For instance, hearings held by Senator John Glenn a few years ago disclosed that there was a meltdown at the Savannah River nuclear reactor which was a tritium-producing reactor for hydrogen bombs and had been *completely* kept quiet. In fact, as Gould and Goldman show in *Deadly Deceit* they falsified the meteorological measurements, the radioactive measurements, and the measurements of strontium-90 and were actually high when they were nearby, but they showed that for the station nearest Savannah River there was practically no radioactivity in the air, but all around the area there were *huge* releases into the air recorded. So they were manipulating the data in order to protect the secrecy that was essential in order not to have the public demand an end to the bomb-building.

DTR: They say, "Even if you lived right next door to a plant you would receive less that 0.1 millirem a year."

EJS: As I told you, the typical doses that actually have been reported in the United Nations Scientific Committee on the Effects of Atomic Radiation—just the external dose—were as high as 30 or *50* millirem per year. For the case of the Connecticut reactor I calculated that the internal doses to the bone marrow to children were *hundreds* of millirems per year. So these are just *total lies*—simply like the same principal that Goebbels used in Germany that if you make a lie big enough the people will finally believe it.

DTR: Or cause "an average exposure of less that 1.5 millirem to people within fifty miles of the plant."

EJS: It’s all false because you can take the milk from Oswego, New York, or from Lancaster, Pennsylvania, and ship it into downtown Brooklyn and the Bronx, and then the people in the course of a year—a fetus might get thyroid doses of hundreds of millirems to the developing thyroid. Because there is no inverse decline with distance away from the plant when you transport it in a tank truck. Which by the way they don’t consider in their environmental impact statements. I testified on this at the TVA hearings held by the opponents to reactors in Tennessee some years ago—it must have been somewhere in the middle seventies—in which I discovered that they leave out of their calculations of the population dose the radioactivity that comes out of the stack and gets on the land and is washed into the water like agricultural fertilizer so that they don't have to include the population downstream drinking the water as receiving any dose.

DTR: Just like all the study you did with Shippingport and seeing what was happening there.

EJS: That's right and because it was all in the national interest, you see, they felt they were doing a service to the nation by lying. That's the tragedy. They weren't really lying, not so much, even to protect their pocket books, although this may have been a factor. But the biggest reason for lying was that the government *demanded* the coverups.

DTR: And of course that was then, and now the biggest reason for lying is because they've got so much invested they can't stop now.

EJS: Well, let's put it this way: the biggest reason was not only the investments (which is true for the banks and the large corporations that invested in uranium and all these facilities), but the biggest reason was the *need*—the felt absolute need to continue to build more and more bombs. And to test them all the time. And to make new ones all the time. And keep improving them all the time. People were so mad, so completely maddened by this arms race and so fearful that they said well *anything* is better than World War III and therefore we must lie in order to be able to continue to protect ourselves.

DTR: But what about right now?

EJS: Right now that is all gone. The cold war justification for all this lying and deception is gone and now it is simply something to protect your reputation, to protect knowledge of your past misdeeds and to protect yourself against lawsuits.

DTR: So now it is the need to maintain overrides anything else only because they've done it this long, to admit it now would be catastrophic on all of the other levels of reputation, or payback.

EJS: Absolutely. It would be catastrophic in terms of insurance claims. It would be catastrophic in terms of compensation that the government would have to pay people who have been injured. It would be catastrophic in terms of having to shut down entire industries and create huge unemployment. It would be catastrophic in terms of investment by banks and people like the Queen of England, six, seven, eight *billion* dollars worth of uranium that overnight whose value would drop to zero. It would impoverish the crown of England for an example.

DTR: Here they're saying "Scientific studies over several decades show no health effect on people from exposures below about 10,000 millirem."

EJS: We now saw, as I just told you, there are hundreds of articles by now that show health effects at levels of one rad which is a thousand millirad for infants given Xrays as Dr. Stewart showed and for individuals irradiated in the *first* trimester it's a hundred millirads. So that they falsified the statistics by a hundred-fold.

This is all documented in the latest BEIR V Report by the U.S. National Academy of Sciences Committee on the effects of radiation that came out in 1990. In the last chapter they talk about all the latest evidence around many nuclear plants where the doses are *far* below 10,000 millirem to the population and to workers in plants at levels *far* below the normal permissible limits. They're seeing huge increases in cancer rates and leukemia.

Another chapter is devoted to the enormous effects on the mental and school performance of children who were born to mothers irradiated in Hiroshima, children who received only small amounts of Xrays to their thyroids, the result of head irradiation—*well* below four rads. Then the last chapter showing all the effects on workers and populations around nuclear facilities where the doses were well below permissible limits today.

DTR: So that report actually does contain a tremendous amount of damaging information.

EJS: It does! It does. It contains enormous damaging information. In fact there's a chapter in *Deadly Deceit* in the revised and updated 1991 softcover edition where there's a chapter explaining how the BEIR V Report fully confirmed these new findings—that *very* low doses are absolutely horribly damaging, especially to the early embryo and fetus.

DTR: Which is of course quite different from the standard, healthy, middle-aged person as opposed to,

EJS: That's right. And now even Dr. Stewart—and this is the most interesting thing that just happened in Berlin, and this is an article that will be published I believe in the March, 1993 issue of *Industrial Hygiene* where Dr. Stewart and her associate Dr. Kneale have re-analysed the data on the Hanford workers using very sophisticated computer classification of all their doses every year, following them up for as long as they lived and then were able to show that the radiation needed to *double* the risk of leukemia is just something like 800 to 900 millirad. I'm sorry the dose required to double all cancers, among the Hanford workers, over their period of employment (typically on the average of ten to fifteen years) is only 800 to 900 millirads.

So that even for *adults* now we see the evidence that *very* small amounts of radiation—far below 10,000—actually double the incidence of cancer.

DTR: Are rads equal to rems?

EJS: Yes. A rad is equal to a rem in this situation. Except for neutrons and heavy particles like alpha particles.

DTR: On a final somewhat philosophical note in all this, you wrote in *Secret Fallout* how, if the information can't get out, it's as if the immune system of a body is suppressed and it can't adequately deal with what's going on.

EJS: That's right. So a society is bound to destroy itself if it continues to suppress this information. And what will very likely happen is simply as follows: Since the people in China have practically no nuclear reactors and Japan is fortunate in having no milk and cheese in its diet, it will probably be the case in the next ten to thirty years, the east Asian nations will, the island nations like Japan, Taiwan, the islands of Indonesia, will become the dominant countries in the world because they won't have children who will be crippled from birth. They will have children who will be born full, normal weight and will have no impairment of their ability to do mathematics and computer programming and calculation and reasoning skills.

DTR: As well as themselves to be able to produce healthy babies.

EJS: That's right. And so if you produce healthy babies, you have a good chance to advance economically and industrially and be very highly competitive compared to countries like Russia, and England, and the United States that have poisoned themselves and continue to poison themselves in order to hang on to a technology that they created as a result of the cold war.

DTR: China doesn't have any reactors?

EJS: They have one commercial reactor under construction near Hong Kong.

DTR: Near Hong Kong, that makes sense.

EJS: Sure, yes—if it explodes, you have a good chance to wipe out Hong Kong. There's no way to evacuate that island. So it's not a very smart thing to do, but under the pressure of wanting to be part of the modern scientific-technological development, China—the Chinese engineers and scientists—also wanted reactors. But they have a few reactors of course for making bombs in the western desert but they are far from the population centers.

DTR: And they haven't been able to build other ones primarily because of economic constraints?

EJS: Well they have other sources of electricity. They have a lot of mountains with a lot of small streams and so they have hundreds of small hydro-electric plants. That is how they are doing their economy and they don't *need* any nuclear power plants.

DTR: And they don't have as high an energy expectation,

EJS: Consumption per capita as we do—the wastage. And furthermore, and just to make a final point: today, Shanghai, with all its terrible poverty and problems, has a lower infant mortality than New York City. This is in United Nations scientific reports on infant mortality. In the U.S., which used to be lowest in infant mortality in the world in 1935-'40, the United States is now twenty-third.

DTR: Thank you very much for your time and for all you have been endeavoring to do through your career to educate people about this new deadly nuclear technology. I know you're very busy with ongoing work like helping the lawyers in Hanford and elsewhere.

EJS: Well I've got another interview this afternoon on a local radio station and I'm losing my voice.

DTR: I'll let you go and once more say thank you so very much for your time. REALLY appreciate it.

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[1] included below is a segment presenting more detail about this supralinear curve of dose-response:

The following is from Chapter 15, Fallout at Shippingport, in Dr. Ernest Sternglass's 1982 book, *Secret Fallout, Low-Level Radiation From Hiroshima to Three-Mile Island,* published by McGraw-Hill. The complete out-of-print book, with permission of the author, is available in both on-line "ascii-viewable" form, as well as "prettified" hardcopy PostScript form from me, dave@sgi.com, 415/390-3556(w), 408/479-4187(h).

This passage describes the monumental finding in 1972 by Dr. Abram Petkau, a scientist working for the Canadian Atomic Energy Laboratories in Pinawa, Manitoba, that called into question the underlying foundation of cell damage from exposure to low-level ionizing (penetrating) radiation like that generated from nuclear bomb explosions and in the chain-reactions of nuclear reactors. Instead of the theory—perpetuated by international "watchdog" committes like the International Commission on Radiological Protection (ICRP), the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), and the U.S. National Academy of Science committee on the Biological Effects of Ionizing Radiation (BEIR) which have been responsible for deciding what is a "safe" level of exposure by humans to radioactive materials—that there is a linear relationship between exposure to high-level man-made radioactivity going down to low-level radioactive materials, this discovery by Dr. Petkau advanced the possibility of there being a supra-linear curve for the dose-response, with lower levels of radiation potentially being hundreds to thousands of times more efficient in producing the free radicals that penetrate and destroy the blood cells of immune systems.

In further support of the argument that relatively low doses of radiation from nuclear reactor releases can have readily detectable results on human health, I summarized the evidence that infant mortality in Beaver County and other areas along the Ohio had increased in 1960 and 1961 following an accidental release of radioactive isotopes in the course of a fuel-element melt-down at the Waltz Mills nuclear reactor on the Youghiogheny River, some 20 miles upstream from the city of McKeesport in April of 1960.

Within a year after that little-known accident, infant mortality rates doubled in McKeesport and then slowly declined again to the level of the rest of Allegheny County, which gets its drinking water mainly from the Allegheny River. And the effects could be seen in a steadily declining pattern of infant mortality peaks along the Monongahela and Ohio River communities for 160 miles downstream.

In the course of the questioning period that followed my presentation, I was asked how it was possible that such relatively small doses comparable to normal background levels could lead to such large changes in mortality rates, when it apparently took ten to a hundred times these levels to double the risk for the survivors of Hiroshima and Nagasaki. In response I cited the startling results of a recent study published in the journal *Health Physics* in March of 1972 by a scientist working for the Canadian Atomic Energy Laboratories in Pinawa, Manitoba, Dr. Abram Petkau. Dr. Petkau had been examining the basic processes whereby chemicals diffuse through cell membranes. In the course of these studies, he had occasion to expose the membranes surrounded by water to a powerful X-ray machine, and observed that they would usually break after absorbing the relatively large dose of 3500 rads, the equivalent of some 35,000 years of normal background radiation.

This certainly seemed to be very reassuring with regard to any possible danger to vital portions of cells as a result of the much smaller doses in the environment from either natural or man-made sources. But then Dr. Petkau did something that no one else had tried before. He added a small amount of radioactive sodium salt to the water, such as occurs from fallout or reactor releases to a river, and measured the total absorbed dose before the membrane broke due to the low-level protracted radiation.

To his amazement, he found that instead of requiring a dose of 3500 rads, the membrane ruptured at an absorbed dose of three-quarters of one rad, or at a dose some 5000 times less than one rad, much less than was necessary to break it in a short, high-intensity burst of radiation such as had occurred at Hiroshima and Nagasaki.

Dr. Petkau repeated this experiment many times in order to be certain of this disturbing finding, and each time the result confirmed the initial discovery: the more protracted the radiation exposure was, the less total dose it took to break the membranes, completely contrary to the usual case of genetic damage, where it made no difference whether the radiation was given in one second, one day, one month, or one year.

By a further series of experiments, he finally began to understand what was taking place. Apparently a biological mechanism was involved in the case of membrane damage that was completely different from the usual direct hit of a particle on the DNA molecules in the center of the cell. It turned out that instead, a highly toxic, unstable form of ordinary oxygen normally found in cell fluids was created by the irradiation process, and that this so-called "free radical" was attracted to the cell membrane, where it initiated a chain reaction that gradually oxidized and thus weakened the molecules composing the membrane. And the lower the number of such "free radicals" present in the cell fluid at any given moment, the more efficient was the whole destructive process.

Thus, almost overnight, the entire foundation of all existing assumptions as to the likely action of very low, protracted exposures as compared to short exposures at Hiroshima or even from brief, low-level medical X-rays had been shaken. Instead of a protracted or more gentle exposure being less harmful than a short flash, it turned out that there were some conditions under which it could be the other way around: The low-level, low-rate exposure was more harmful to biological cells containing oxygen than the same exposure given at a high rate or in a very brief moment.

No longer was it the case that one could confidently calculate what would happen at very low, protracted environmental exposures from studies on cells or animals carried out at high doses given in a relatively short time. It was clear that the direct, linear relation between radiation dose and effect was no longer the most conservative assumption, for it was based on the implicit assumption that a given dose would always result in a given increase in risk, no matter whether the radiation was absorbed in one second or one year. Clearly, if Dr. Petkau's findings were to be confirmed by other experiments in the future, our whole present understanding of low-dose radiation effects would have to be revised, since small exposures might turn out to be far more harmful to living cells than we had ever realized.

Thus, I pleaded we should not reject evidence for much higher than expected infant and cancer mortality rates merely because that evidence did not seem to agree with our previous estimates based on high-level, high-rate exposures at Hiroshima and in various studies. I now believed that we had to be prepared to revise drastically our expectations as to what apparently innocuous low-level, chronic radiation exposures to critical cells and organs from environmental sources might do.

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It is not enough for a handful of experts
to attempt the solution of a problem,
to solve it and then to apply it.
The restriction of knowledge to an elite group
destroys the spirit of society
and leads to its intellectual impoverishment."

— Albert Einstein