NH-515-May-4-2021-FINAL-Indian-Point-SHUTDOWN-Manna-Jo-Green-Dr.-Gordon-Edwards

Libbe HaLevy

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The Indian point, nuclear reactor just outside New York city, shut down permanently as a Friday, April 30th, 2021, Hazara we're free and clear aren't we, well, we won except not really. You see, while a permanent shutdown of a nuclear reactor is a very good thing. And cause for celebration, it only shifts the battleground of effort because of the decades of highly radioactive nuclear waste that were produced during the operation. And that's why when a genuine expert on these matters explains

Dr. Gordon Edwards

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When you have a nuclear reactor. The fundamental fact about nuclear power is that it cannot generate electricity without simultaneously generating hundreds of radioactive poisons, which never were found in nature before 1940. These are brand new to the evolutionary context in which heats the human race has existed. And those are the dangerous materials that we have to keep out of the environment.

Libbe HaLevy

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That's what's in all the waste generated by any and every operating nuclear reactor. So when you hear the hard, long suppressed facts about what decommissioning a nuclear reactor really consists of and how long we have to control the radioactive waste and keep it out of the environment, you begin to understand the forever nature of that terrible in escapable seat that we all share

Announcer

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Clear hot seat. What are those people thinking? Nuclear Hotsy what have those boys been breaking their hot Hotsy the Ms. Sinking our time to act is shrinking, but the visceral Hotsy, it's the bomb.

Libbe HaLevy

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Welcome to nuclear hot seat, the weekly international news magazine, keeping you up to date on all things nuclear from a different perspective. My name is Leiby Halevi. I am the producer and host as well as the survivor of the nuclear accident at three mile island from just one mile away. So I know what can happen when those nuclear so-called experts get it wrong. This week, we celebrate the closure of the Indian point, nuclear reactor, only 25 miles from Manhattan. And we've got two interviews with which we do it. First. We speak with manager, Joe Green, who for 20 years has been environmental director for Hudson river, sloop Clearwater, and one of the leaders in the battle to shut down Indian point. We acknowledged the wind before launching into a preview of what the next level of work needs to be. Then a cornerstone interview with Dr.

Libbe HaLevy

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Gordon Edwards of the Canadian coalition for nuclear responsibility. He goes over the reality of decommissioning that the nuclear industry does not want any of us to understand from the radio active isotopes produced by the nuclear chain reaction and the half lives of each of these that nobody wants to talk about. And he includes some insights on Japan's planned release of radioactive water into the Pacific, and that there is a relatively easy way to cut down on the dangerous to the ocean ecosystem. If TEPCO and the Japanese government can be persuaded to have some patients. Plus we will have nuclear news from around the world numnuts of the week for outstanding nuclear bone headedness, and more honest nuclear information than Melinda gates will be talking about in her divorce proceedings from bill, all of it coming up in just a few moments today is Tuesday, May 4th, 2021.

Libbe HaLevy

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And here is this week's nuclear news from a different perspective. Top story in the U S this week is the shutdown of the Indian point reactor ending the nuclear era for the New York city area. We'll have more details about the shutdown during our two featured interviews today. And on the website, we will link to a counterpunch article by Joseph Mangano of radiation and public health that spells out its history and the advantages of shutting it down. Now in Texas, a bill is advancing through their house that sakes to ban spent nuclear fuel high level radioactive waste from being stored in Texas. Great example of NIMBY as plans by waste control specialists in Andrews county, Texas moves forward with plans at the federal level to store this dangerous waste. State lawmakers are aiming to ban the materials from entering the state, but how spilled 2, 6, 9, 2 would also give waste control specialists, a big break on state fees.

Libbe HaLevy

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It pays for its existing disposal facility for lower level radioactive waste. Governor Greg Abbott wrote to the NRC last year, asking them to deny the license application stating that the proposal presents quote, a greater radiological risk than Texas is prepared to allow he's joined in his opposition by oil companies that operate in the region and environmentalist. Talk about your strange bedfellows in New Mexico. The Los Alamos national laboratory is proudly touting its returned to Santa Fe initially providing lab space for 75 technicians and plan to expand to 500 more. Y Lanel as it is referred to is simply running out of room in Los Alamos and it needs space to expand as its does the same. And what is that mission ramping up to expand production of nuclear bomb cores Atlantal and the Savannah river site in South Carolina Congress has tasked them with producing 88 0 plutonium pits per year.

Libbe HaLevy

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These are the triggering devices for nuclear warheads. So that means 80 plutonium pits per year by 2030. So while Lanel proudly touts the fact that nothing nuclear is going to be happening in Santa Fe, indeed, it's making room for more nuclear to happen at its base in Los Alamos. Japan's announced decision to release one and a quarter million tons of radioactive water from Fukushima into the Pacific ocean in 2022 is sparking further protests around the globe. Hundreds of south Korean fishermen across the country held protests on Friday, April 30th, calling on Japan to reverse its decision about 800 fishermen participated in rallies at ports in nine cities. According to south Korea's national Federation of fisheries cooperative fishermen held anti-Japan banners with slogans, such as condemn irresponsible nuclear attack, and is one fishermen who had worked in the industry for 38 years, said, why is Japan doing this?

Libbe HaLevy

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How could they do such a bad thing against the sea don't they eat fish? And the Pacific activist group young Solara had added their voice to the calls against Japan, dumping the nuclear radioactive waste into the Pacific ocean. Young said she was shocked by the decision. She said Japan has been described pretty unflatteringly in the past as a house, without a toilet in regards to its nuclear power industry. This act is an example of possible transboundary harm in Finland for Novias nuclear power plant construction in PICA, on Finland's Northwest coast has been hit by further delays, increasing costs by around 1 billion euros and added another year to the already four year delay in its construction, nuclear construction over schedule and over budget is anyone surprised. And now for this week's exercise in nuclear bone headedness

Libbe HaLevy

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Vacation. Time is fast upon us and with COVID restrictions on travel, being dialed back, many people are determined to go out and have a life affirming adventure getaway. And so they are heading straight to Chernobyl that's right. Since the 2019 HBO hit series, true noble aired around the world, people are just dying to go visit the radiologically contaminated site, literally dying, but of course not Chernobyl anticipates a major tourism bump in the wake of the historic nuclear disasters, 35th anniversary on April 26th of this year tour companies tout the area as quote, safe for tourists before adding some areas are higher risk than others. And recommending that visitors avoid lingering near them, but even lingering in the so-called safe for tourists areas puts everyone there at risk just because people can walk away today. Doesn't mean that they're not taking home with them. Some unwanted souvenirs, radioactive particles sequestered away in their hair, on their clothes in their lungs, maybe in their digestive tract from food or liquids consumed while onsite.

Libbe HaLevy

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Of course, by the time that souvenir makes itself known through cancer in fertility, birth defects, auto immune conditions, or a wide range of other diseases or death, it could be years or decades from now. And with so much time elapsed, it's doubtful that anyone will trace their health breakdown back to this wild post or mid COVID excursion. But just because you don't see the connection doesn't mean it's not there. And that's why anyone who is crazy enough to go to Chernobyl for a little vacay in a hot meaning radiologically hot climate. You are this week's,

Announcer

01:10:23

awake.

Libbe HaLevy

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Here's the first of this, week's two featured interviews. It's not often that we have something great to celebrate, but here it is. The last of the Indian point, nuclear reactors was permanently shut down on Friday, April 30th, to find out what it was like to finally reach this milestone and learn about the battles that are still ahead of us. We spoke with Mt of Joe Green. She is the environmental director for Hudson river sloop Clearwater, and has been one of the leaders in the battle to shut down Indian point a nuclear reactor facility that is located only 25 miles as the Crow flies from Manhattan. I spoke with managing on Friday, April 30th, the day that it actually happened, manage Joe Green. What a terrific day to have you with us on nuclear hot.

Manna Jo Green

01:11:16

I am thrilled to be here. It's been a long haul, but today is a critically important day in New York and in the whole country, in terms of nuclear power.

Libbe HaLevy

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First off my heartiest, congratulations to you and Riverkeeper and all the people and organizations that worked so hard towards the shutdown of Indian point.

Manna Jo Green

01:11:41

Yes, thank you. It's been, as I said, a long haul, our founders, the people who founded a clear winner even before the slope was built and launched where opposed to citing a nuclear power plant. So near New York city, 25 miles from New York city, 200 million people live within 50 miles of Indian point and then nine 11 came around and then executive Andy Mayle. And I arrived at the office. The next day, took one, look at each other and said, oh my God, Indian point, add the plane that took out one of the world trade towers gone down 62nd spinner. It could have dislodged the unprotected fuel pools, dislodged the water and cost a field qualifiers, not unlike what happened at Fukushima. So we've been working on it an intensely since nine 11, we formed an Indian point, safe energy coalition. And we brought in experts to educate the community over the years.

Manna Jo Green

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We've hold held multiple technical conferences, including with Gordon Edwards. Who's wonderful teacher in this regard helps people to understand a very technical, complicated issue. And over the years held many technical briefings, congressional briefings, digital forums, and educated the community. So I would say that the decision makers in New York are very well-educated and up to date, but the main reason that Indian point closed was it, it was approaching 40 years of operation. And while it was profitable, when it was new, as the signs of aging, including steam, boiler ruptures, and siren failures, and many other equipment failures, it started to become more costly to operate the facility than the profit they were making. And so as much as we wanted it to close for the danger that it was posing, there was also an economic reason. And that's why Riverkeeper the New York state attorney general and Entergy who owns still owns, but not for much longer.

Manna Jo Green

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The Indian point reactors agreed to a settlement agreement to close the plant three years ago, it was mainly a financial decision. And also the fact that in their application for 20 year relicensing, they were losing, there was a problem with coastal consistency. There were problems around aging management and we had Clearwater had a unique contention around environmental justice. So between the legal landscape and the economic shift from being a profitable facility, to being an economic drain, that's really why the decision was made. And the benefit is that the facility will be much safer once the plant is closed and it'll stop making the thousands of tons of nuclear waste. It has generated over the last 40 years,

Libbe HaLevy

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Going back in history a little bit in 2000, the nuclear regulatory commission rated Indian point as the most troubled plague plant in the country. What are some of the issues that have come up through the years that have earned it? This label,

Manna Jo Green

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As I mentioned, one of the main reasons for the danger is its location. So if there's a problem at Indian point, there would be vast impacts to as many as 20 million people that live or work within the facility. But I did mention a steam boiler and rupture transformer explosions contamination in leaking and contamination of the groundwater under the plant, which exceeds drinking water standards and is leaking into the Hudson river. There are other communities that do take their drinking water from the Hudson river and many other internal problems that were symptoms of an aging facility. So between its location and the operational and functional problems that it had been having, the other danger comes from storing the fuel that it generated in overcrowded fuel pools. Originally the plant was built for 20 year operation and given another 20 or extension, but those fuel pools were not designed for the amount of nuclear waste that was generated due to the extension.

Manna Jo Green

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And also more recently, instead of using regular enriched uranium fuel, they've been using what's called high burnup fuel, which is hotter, more radio active, but it allows the fuel to stay in the fuel pool a longer. So they don't have to have so many outages for refueling. And that I think presents a problem today because Holtec the company that is likely to receive the licenses to do the decommissioning is noted for its rushed quick and dirty decommissioning. And one of our biggest concerns is moving high, burn up fuel out of the fuel pool and to dry cask storage to soon,

Libbe HaLevy

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I wanted to get into the whole tech angle on it because they are noted for bragging to governments or those in charge of the money behind this, which is enormous that they can do the decommissioning faster and cheaper than anyone else. Then I think two words we never want to hear in connection with anything. Nuclear is fast and cheap because we need to be in this for a long haul beyond our ability to imagine. So what is the current status? Because you're moving into a new era now with Indian point, what is the current status with Holtec and its desire or its likelihood of coming in and being the designated driver for the decommissioning process

Manna Jo Green

01:18:41

Within the last couple of weeks, the public service commission, general Riverkeeper Westchester county and others have negotiated with Holtec, what's called a joint proposal. The comments were doing yesterday and buying next week. We will know whether or not the joint proposal is approved to transfer the licenses for all three units, but Indian 0.2 and three, who Holtec international and it's LLC subsidiary. And you've been extremely complicated. One good thing that came out of the joint proposal. This proposed second settlement agreement for the license transfer is financial surety. And Holtec has a horrendous history of all kinds of malfeasance, bribery lying to public officials. They're under promotional investigation in New Jersey right now, which has oyster Creek. They're an unreliable company and we have fought hard to have the public service commission consider their history. It's so much that they were banned from doing business with the world bank and the Tennessee valley authority.

Manna Jo Green

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And there was a huge scandal in Canada involving hold check because they are not an honest and reliable company. So we got some financial surety, but that doesn't change their history. And it also essentially gives somewhat of a green light for their bigger plan, which is over time to move high level radioactive waste to their, what they call consolidated interim storage facility in New Mexico. They will also be when they decommission the facility. If this goes through, there'll be taking the reactor card and the pieces and the reactor internals and other radioactive infrastructure on the site, they're putting to load onto barges barge past New York city, put on a train, run it across the country and put all the communities along that route in danger, we believe in the safest possible onsite storage until we're absolutely sure that there is a safe place to move it and only move it once consolidated interim storage right now is not allowed until a permanent repository is found.

Manna Jo Green

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Yucca mountain is pretty much off the table. And if some of these decisions will be made into the future. But I think what a lot of people don't realize is while nuclear fuel was being used to generate electricity, it was also generating massive amounts of nuclear waste. And there never has been a good solution for that. But now we're at the point where the nuclear facilities are closing and something has to be done. So right now we're focused on, as I said, the safest possible loan site storage. So we can figure out what, if anything are the next steps, but shipping it across the country is extremely dangerous. And there's very serious environmental justice issue in Texas and New Mexico who have been burdened by exposure to radiation as far back as the original atomic testing of the Trinity facility. And then all the uranium mining and processing the workers and the community members have been exposed. And now Holtec plan is to burden them further with waste from all over the country. And as I said, putting the communities along the way at risk of an accident during transportation,

Libbe HaLevy

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Is there an alternative company to Holtec because I know in the time I've been doing nuclear, hotseat the last 10 years they were never mentioned. And then all of a sudden they popped up and they dominated the discussion ever since. And they've been the ones who's been getting all the money and getting all the jobs. Not that they're reliable. Is there anyone else?

Manna Jo Green

02:23:18

There are two main other companies. And there also is the alternative that Entergy could have kept the facility and hired a lot of the contractors that whole tech will, but Entergy one bit to relieve themselves of the liability. And Holtec has some very creative ways of turning that liability into a financial asset. But the companies that we're familiar with are at Zion, it was energy solution who had multiple done other facilities around the country and Vermont Yankee was Northstar. Who's now partnered with iRANO. They actually own the mini radioactive waste facility in west Texas, but they have done some of the new England facilities and others, none of them have a perfect track record, but also neither of those facilities have as her Rendell and disrespectful track record myth. As I mentioned, bribery, various scandal and out at Santa, no fray where Holtec canisters are being used.

Manna Jo Green

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They actually had a very serious near miss accident where they were taking accounts you're filled with high level nuclear waste that was removed from the fuel pool and put into these thin wall canisters in the process of moving them into a concrete cask. It got stuck. The canister was hanging just over the cask and not able to slide into and be positioned in this concrete cask. And then when they did rearrange things, so they could safely lower it, it was scraped when a thin-walled canister gets scraped. It's very prone to corrosion. These nuclear issues are extremely complex. And I think most people think that the nuclear regulatory commission has it all under control. And that's exactly the opposite of reality. They are an industry captured agency that grants waivers and exemptions almost always, you know, they give them out like candy at the risk of public health and safety. We've alerted Congress to that concern. But I think one of the good things about the joint proposal in New York is that it gives New York more control in a setting where the nuclear regulatory commission is really not following its mission and not providing adequate oversight, not even requiring that Holtec and other companies meet the very regulations that the nuclear regulatory commission is responsible for. Implementing,

Libbe HaLevy

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You mentioned public health and safety and getting back to Indian point itself. What are some of the circumstances that are going to be alleviated now that as of today, Friday, April 30th, it is shutting down.

Manna Jo Green

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Well, the main thing that will be alleviated is an issue with the reactor or all of the equipment used to, for example, the steam boilers, the transformers, all of that equipment will not be in operation. And so that means that those kinds of nuclear accidents will not occur. There won't be a meltdown. Those incidents will occur. However, the fuel pools are still there. It's going to take a while for them to be unloaded. So a fuel pool fire could still occur. There are many other problems that don't when, when the reactor is shut down and new ones that come about because of the actions that take place during decommissioning. I mentioned that they literally cut up the facility and they're planning to barge it. Some of the equipment off site that is radioactive, but when they're cutting things apart, there are radioactive dust that is released into the atmosphere that can, first of all, affect the workers, if they're not adequately protected and also affect the community at large. So it is definitely safer. And by shutting down the plant, you're not compounding the problem of high-level nuclear waste by making more, but there are other very important issues. There could be a radioactive leak from one of the canisters. What, what would we do about that? And so all these questions we're hoping to bring to a newly created New York state decommissioning oversight board, to look deeply into the new issues that are created by moving from the era of nuclear power generation to nuclear waste decommissioning.

Libbe HaLevy

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It certainly seems that you like anyone involved in the fight against nuclear is going to have your hands full for the duration, with the issues that are coming up next. But taking a look at this moment right now,

Manna Jo Green

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Are you going to do to celebrate? Well, what I'm going to do is be on another conference with Riverkeeper and some of the key people that over the last 20 years in particular have brought us to this point of greatly reducing the danger to Peekskill and the surrounding community and the greater New York metropolitan area. And then also raising the new concerns that this new phase brings about. I would say there's a great sense of relief that we were able to accomplish this. I, I think in my 20 years at Clearwater, it's one of the most important victories that we've had. And it really also honors the founders who were concerned about this 50 years ago. It moves us away from our dependence on fossil fuel and nuclear. And we've been very actively working to implement a renewable energy economy here in this region with storage and efficiency.

Manna Jo Green

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It's not just about what we don't want, but what we do want and are actively participating in that transition and teaching others. Clearwater's ammo is education, whether it's school kids on the boat or elected officials and other decision-makers in the surrounding communities or the communities throughout the watershed. I think there's one other thing that people need to realize. There's a lot of debate in the environmental community about whether or not nuclear energy is a climate solution. And I think from what I've just said, you can understand how dangerous it is, both in the generating phase and in the nuclear waste management, all the problems that, that poses. So people who think that nuclear, maybe a climate solution, or certainly ignoring those dangers new nuclear is not a solution. It is not safe. All of the things that the industry that's trying to promote, advanced nuclear reactors or small modular nuclear reactors.

Manna Jo Green

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And unfortunately as good as I would say, the Biden administration is in many ways. I think it's magical thinking to consider nuclear a climate solution. I think that all of that investment needs to go into transitioning, to renewable energy with storage, with efficiency and doing it as quickly as possible. So we still have a lot of work to do, but it's an important landmark in not only the history of Indian point and the Hudson river valley, but I think it's a landmark decision for the nation. And now it's just going to take a lot of hard work and scrutiny to make sure it's done as safely as possible.

Libbe HaLevy

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Nana Joe Green. First of all, my gratitude, our gratitude to you and the others for the decades of dedicated work that you have provided. And I'm delighted to have been able to talk with you on this historic day on behalf of the listeners of nuclear hot seat.

Manna Jo Green

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Thank you, Libby. Thank you so much. And thank you for bringing the out because the mainstream media doesn't cover it the way you do so well, thank you.

Libbe HaLevy

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That was managed Joe Green, the environmental director for Hudson river sloop Clearwater for 20 years, she and her group. And so many others have been fighting to shut down the last of the Indian point nuclear reactors. And now it has been achieved as of last Friday, April 30th, 2021. We will have this week, second featured interview with Dr. Gordon Edwards. And it's a doozy in just a moment, but first the problems of the nuclear fuel cycle are both endless and forever. Even if we defeat COVID improve the financial well-being and health of the populace, even turnaround the climate crisis, the problems of the radioactivity created and released by nuclear reactors, weapons, production, uranium mining, and the entire fuel cycle will remain with us for unimaginably long periods of time. As you learn more about during today's second featured interview, it's been going on under our noses for decades since the Manhattan project in the 1940s and the nuclear industry is continuing to hide, confuse, or obfuscate its many transgressions against people and the environment.

Libbe HaLevy

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That is why you need nuclear hot seat. We don't get distracted. We look at the nuclear aspect of our world every week in depth with continuity and context in a way that mainstream media does not provide nuclear hot seat is the only program you can count on to report the ongoing, evolving nuclear truth that the nuclear industry would rather we not hear about let alone understand, but even as we continue to pull ourselves out of what COVID has done to us financially, it continues to hit this show very hard, which makes your help keeping us going more important than ever. That's why the time would be right now to support us with a donation. It's easy. Just go to nuclear, hot seat.com and click on the big red donate button to help us with a donation of any size. And that same red button is now where you can set up a monthly $5 donation, the same as a cup of coffee, and a nice tip here in the U S so by nuclear hot seat of metaphoric cup of coffee, I promise it will not go for caffeine, but for social media reach and planning so we can get the show out even further.

Libbe HaLevy

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So please do what you can now and know that however much you can help. I'm deeply grateful that you're listening and that you care. Here's this week's second featured interview. We've spoken with Dr. Gordon Edwards of the Canadian coalition for nuclear responsibility, many times for the show, he has a clarity and an uncanny ability to distill complex scientific issues into an easy to grasp narrative. That makes sense on first listening here in recognition of the Indian point closure, Dr. Edwards goes over the realities of decommissioning, a more thorough look at the contamination created by and at every single nuclear reactor in the world. He also shares some thoughts on how Japan and TEPCO could easily avoid dumping 1.2, 5 million tons of Fukushima's radioactive water into the Pacific ocean. All it would take is patience and money. Two things that TEPCO either does not have, or does not wish to part with. We spoke with Dr. Gordon Edwards on Thursday, April 29th, 2021. And he got right down to,

Dr. Gordon Edwards

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I just wanted to alert people to the fact that when you have a nuclear reactor, the fundamental fact about nuclear power is that it cannot generate electricity without simultaneously generating hundreds of radioactive poisons, which never were found in nature before 1940. These are brand new to the evolutionary context in which heats the human race has existed. And those are the dangerous materials that we have to keep out of the environment because radioactive materials are like little, the atoms are like little time bombs. They're like mini little miniature time bongs, unlike most atoms, which are stable in which persists for millions and millions of years without ever changing these radioactive atoms, explode or disintegrate. And when they explode, they give off subatomic shrapnel, which is very damaging to living things. It breaks DNA molecules and other molecules at random. And consequently causes a host of diseases.

Dr. Gordon Edwards

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For example, cancer is all kinds of cancers are caused radiation exposure and also damage to the reproductive cells, which can affect future generations as well as other things such as damage to the immune system, which makes people susceptible to all kinds of infectious diseases. So it's very important to keep these radioactive poisons out of the environment and because they are elements, not compounds, they cannot be destroyed by any chemical method. So that the only solution that anybody has come up to come for these materials is to simply keep them out of the environment of living things. Now, the core of the nuclear reactor contains the radioactive fuel, and this becomes millions of times more radioactive when it's used compared with when it's unused. The reason for that is because the broken atoms that are split each one of these broken pieces of a uranium atom or plutonium atom is a new radioactive material, which is a highly dangerous.

Dr. Gordon Edwards

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And some of them last for only the blink of an eye, they're gone in no time. And some of them lasts for decades, such as cesium, 1 37 and strontium 90. And some of them last for hundreds of thousands of years. So that any fact, we have a danger, which has perpetual a danger, which is for all practical purposes eternal. And this is where all of the packaging, all of the shielding, all of the storage, either above ground or underground, has to be very, very good. And we have to keep 99.99% of this material out of the environment. Now this becomes particularly difficult when a reactor reaches the end of its lifetime. Not only do you have to remove the fuel, which contains most of the radioactive material, but all of the structures, all of the steel and the concrete and the pipes have become also radioactive.

Dr. Gordon Edwards

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And they've become radioactive from a process called neutron activation. Neutrons are flying around inside the core of the reactor, splitting atoms, and causing the release of energy, which can turn returned into electricity. But those stray neutrons, when they hit a non-radioactive material, they turn it into a radioactive material. So radioactive materials are created right inside the steel, right inside the concrete. And these materials are not in the spent fuel they're in the structural materials, which are then cannot be recycled. They cannot be reused for any other purpose. They have to be treated as radioactive waste themselves. And they also have to be stored for hundreds of thousands of years. The intensity of the radiation, even after the irradiated fuel has been removed from the reactor. The intensity of the radiation is extraordinary. For example, here in Canada, we have reactors where you have what's called a thermal shield.

Dr. Gordon Edwards

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A thermal shield is a heat shield near the core of the reactor to prevent too much heat from escaping from the cold after shutdown. This thermal shield gives off 260,000 REMS every hour. That would cause death in 5.5 seconds for a worker who was exposed to that without really heavy shielding. And that's after the irradiated fuel has been removed the calandria show, which is equivalent to the pressure vessel that you have in the American reactors gives off 48,000 REMS per hour. That would cause death in 29 seconds. The pressure tubes, which hold the fuel, just the metallic pressure tubes themselves give off 850 milligrams per hour. That would cause death in 28 minutes. So we have a real problem here with these radioactive materials, structural materials. Now, when the structural materials are going to be packaged and stored as radioactive waste, they often have to cut them and they are planning.

Dr. Gordon Edwards

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For example, to segment the core materials, the core of a, of a nuclear reactor, for example, the Indian point reactor, they plan to segment the large structures. Well, how do you cut something like that apart without causing a lot of dust here in Canada, we had a situation in 2009 where tubes radioactive tubes were removed from a reactor core and they had to be cut up in order to be stored as waste in the cutting operation. Dustless released and over 500 workers were inhaling plutonium contaminated dust for a period of two and a half weeks without any protection. Because the managers said that the radiation levels were low enough, that it was not necessary for them to wear protective equipment or respirators. Well, as it turns out, these 500 plus men are going to be carrying radioactive burdens in their lung for the rest of their lives.

Dr. Gordon Edwards

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As a result of this carelessness on the part of the regulator and on the part of the power plant operator, the owner. So it's very important that members of the public members of the government be involved in the day-to-day operations of the dismantling and to ensure that the conditions are safe for the workers, they should be taking air samples all the time, and they should be analyzing those air samples. Immediately. Many people don't realize again, because they're not informed that whereas penetrating radiation can kill you in a matter of seconds or minutes. As I mentioned earlier, there are other radioactive materials which are internal poisons. They are very, very difficult to measure with radiation equipment outside the body. But once they get inside the body, they can be extremely dangerous. Plutonium is one of those very hard to detect. That's why this contamination went on for two and a half weeks without any radiation, monitors being triggered.

Dr. Gordon Edwards

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The reason why plutonium does not give off penetrating radiation, it gives off a non-penetrating form of radiation called alpha radiation, which is hundreds of times, more dangerous than the more penetrating gamma radiation, but it often escapes monitors. And so therefore the workers track this home into their bedrooms and they carry it in their bodies as well. So this is a consideration that people should bear in mind when talking about dismantling a nuclear reactor. Another thing that's hard for many people to understand, unless they've been told about it is that over the years, radioactive materials collect underneath the reactor and they can go quite deep into the ground. And so the ground itself, the soil under the reactor is a reservoir of radioactive materials, which have leaked into those areas. Now, some of these materials like tritium radioactive hydrogen has a half-life of 12.3 years. That means it's going to be for a couple of centuries and long after the plant has been dismantled, this material will continue to leak into the nearby water systems.

Dr. Gordon Edwards

04:44:40

But some of those materials like carbon 14 have thousands of years, lifetimes, carbon 14 has a 5,700 year half-life consequently. It's going to be there basically forever. And it's going to be leaking into the water systems forever afterwards, unless the owner of the plant is forced to excavate the contaminated soil and to treat the contaminated soil itself as radioactive waste, then you're going to have continual leakage into the environment for many decades after the plant is shut down. So this is something that people should be aware of. In addition, it's also important for people to realize that our community that has become dependent upon a reactor, being in the vicinity and contributing to the local payroll, contributing to the local economy through the jobs it provides. And so on, there can be very serious repercussions, social repercussions. When the plant closes down tomorrow, Indian point, it's going to completely shut down.

Dr. Gordon Edwards

04:45:45

The third unit will be shut down on April the 30th, which is I'm speaking to you on April 29th. And it's very important that the community itself have financial support going forward after the shutdown to compensate the impact on the community Indian point Indian point, it shows in New York state, they have managed to achieve through the cooperative agreement with involving the governor of the state. So that money will be available to ease the burden of making the transition from a nuclear community to a non-nuclear community. And basically that's about all I have to say about the decommissioning problem. It's a much more serious problem than many people realize. Here are some of the materials which are created inside the structural materials inside the steel inside the concrete Nicole 59, which is created inside. The steel has a 76,000 year half-life Nicole 63 has a 101,000 year half-life niobium.

Dr. Gordon Edwards

04:46:48

94 has a 20,300 year half-life chlorine 36, which has created inside. The concrete has a 301,000 year half-life calcium 41 has a 102,000 year half-life. So these are extremely long lived materials, which are not in the irradiated fuel, but in the actual structural materials and people have to learn to realize that nuclear energy truly is the ultimate in the throwaway society, because these materials, which were even used to build the reactor and which were completely non-radioactive when the reactor is built, have now become very dangerous, long lived, radioactive waste, and will remain unusable for hundreds of thousands of years to come.

Libbe HaLevy

04:47:36

It's really like guaranteeing that we're going to kill ourselves with nuclear waste. Even if we stop using the technology, even if we do whatever it's going to take for society to collapse and us to end up being back in the stone age, this stuff is going to outlast us all.

Dr. Gordon Edwards

04:47:55

Well, I don't like to think of it as killing us all I say, I'd like to think of it as being a challenge to us that we have to appreciate because the nuclear industry tries to hide these facts. They don't want people to understand what the problem really is because they just want to get rid of it. They want to just walk away from it. They want to abandon this waste and society has to realize that that's irresponsible, that we can't abandon this waste. We have to keep an eye on it. We have to maintain it in a monitored and retrievable fashion. The good news is that we do know how to package it so that it will stay out of the environment. And if we know how to package it properly in the first place, then we know how to repackage it later on.

Dr. Gordon Edwards

04:48:36

And so the concept of rolling stewardship, which my organization is promoting is that this is an intergenerational problem. It's not a problem of the nuclear industry. It's a problem of society. And for this reason, the nuclear industry should not be trusted with the dismantling of nuclear reactors because they want to hide the problem and they want it to disguise the difficulties. And they don't really, their primary concern is not to make sure that the workers are safe or that the environment is safe, but that their investment is safe. So it's very important that a society have a direct oversight role and ensure that everything is done properly for society for our grandchildren's grandchildren. And not just for the sake of the nuclear industry. I would like to mention something about the underground contamination, a large part of the contamination underground. You might call it a kind of an invisible lake of contamination underneath the reactor, a pool.

Dr. Gordon Edwards

04:49:36

If you prefer a pool of contamination, much of the material in this pool is radioactive hydrogen in the form of radioactive water molecules, because water molecules are H2O, and those are non-radioactive in those in normal occurrence. However, the nuclear reactor creates radioactive versions of non-radioactive elements. Let me just be clear about this. Cesium is a naturally occurring element that you find in the soil anywhere it's not radioactive. What the nuclear reactor does is it creates radioactive cesium. Now what's the difference chain radioactive cesium and non-radioactive Caesium. Well, the difference is simply this, that radioactive cesium has unstable atoms. These atoms are disintegrating or exploding and damaging, whatever living cells might be nearby. Whereas the non radioactive cesium doesn't do that. So when the industry says, for example, that the contamination is really not any higher than background radiation, that's a lie because in the background, there is no radioactive cesium.

Dr. Gordon Edwards

05:50:43

The natural background does not have radioactive cesium in it. So it's not comparable to background levels because there are no background levels. The same thing goes with many of the other radioactive materials. Now, in the case of tritium, the problem with this is that there's no water system. There's no municipal water system, which can separate the radioactive tritium out of the ordinary water. You can't filter the radioactive Tridium out of ordinary water because it's also water. It's just simply radioactive water. You can't filter water from water. So the result is that this radioactive material ends up in everybody's body, whether it's a pregnant woman, whether it's a young infant, whether it's an old man, they're all going to get it in their bodies. And that goes for all of nature's creatures, as well. As a matter of fact, hydrogen is one of the basic building blocks of all of our organic molecules, including the DNA molecule.

Dr. Gordon Edwards

05:51:38

So the tritium, the radioactive hydrogen actually gets incorporated into the biological molecules inside our body, including the DNA molecules. And as a result, they have very long-term implications for what kind of damage they might do and how they might damage the human gene pool. And it's not right to just leave this loose in the environment underneath the reactor. It should be removed. It should be excavated and stored as radioactive waste. Some people who are listening to this program may remember, or may have read, or may have heard that near the Fukushima accident in Japan, which happened 10 years ago, more than 10 years ago, 2011, they have over 1 million tons of radioactively contaminated water, which they want to dump into the Pacific ocean. And one of the main contaminants. So those 1 million tons of contaminated water is tritium, but Tridium is not the only thing in that contaminated water.

Dr. Gordon Edwards

05:52:39

There's also smaller amounts of all of the other radioactive materials. I've mentioned 42 of them. In fact, including strontium 90 season, 1 37, plutonium 2 39 and the carbon 14, which has a 5,000 year half-life that I mentioned earlier, and which is also one of the basic building blocks of life of organic molecules. So when people think about these aspects, just ask yourself the question, why is it necessary to dump a million tons of radioactive water into the Pacific ocean? There's only one reason. And that's because the company TEPCO, which owned the nuclear power plants, which caused the meltdown, they don't want to do it anymore. So it's really for the convenience of the nuclear industry, they could continue storing that water for the next 200 years. And in the course of 200 years, that amount of tritium would be reduced by a factor of almost a million. So just by waiting, just by waiting and storing it and taking your time, you can ensure that most of the tritium disappears before it ever comes in contact with living things. It's a question of priorities. Do you care about life or do you care about the profits of the nuclear industry? If that's the choice and if you leave it in the charge in the hands of the nuclear industry, you can be pretty sure which side they're going to come down on.

Libbe HaLevy

05:54:00

That was Dr. Gordon Edwards of the Canadian coalition for nuclear responsibility. We will have a link up to his website, CC and r.org, and some of his articles on our website, nuclear hot seat.com under this episode, number 5, 1 5

Libbe HaLevy

05:54:25

First correction of an omission from last week's second Chernobyl anniversary show Dr. Ian fairly shared a blog post. He wrote that succinctly lays out the problems with Chernobyl. We will have a link up to his paper added to last week, show number 5, 1 4, and what the heck it'll be on this week's website as well. Nuclear hot seat business podcast rankings during the last week have been very encouraging. They showed us moving up to number 33 in the United Kingdom, number 33 in Belgium, 35 and the Republic of Korea, 47 in Japan. And on top of that, got a note from a listener in the Solomon Islands. It's good to know that this show is reaching people around the world. And last week I was able to attend several of the native American forums, zoom in ours. They were highly informative and eye opening. And when they were available for download, we'll let you know and provide a link.

Libbe HaLevy

05:55:29

But there's one moment I need to acknowledge that struck me very deeply. One of the speakers was Wallace decayed, grand council, chief Ron Tremblay of the Wallace decade nation in what is generally known as new Brunswick. When he was in discussion with tribal elders and other chiefs about the nuclear dangers they face and the rolling force to cite nuclear reactors on their lands. They realized that there was no word in their language for nuclear after much discussion. They came up with the term zona Kwok it means forever dangerous ooze canoe, Zana Kwok truth in language. This has been nuclear hot seat for Tuesday, May 4th, 2021 material for this week show has been researched and compiled from nuclear-news.net to own renard.wordpress.com beyond nuclear, the international campaign to abolish nuclear weapons known as I can counter punched out org, Texas tribune.org, Santa Fe, new mexican.com Kings bay ploughshares.org, reuters.com, abc.net dot a U N B media co-op dot org weather channel.com campaign for peace and the tools and fools at the utterly captured by the nuclear industry.

Libbe HaLevy

05:56:55

Nuclear regulatory commission put regulatory in quotes. Nuclear hot seat is available on all your favorite podcast platform, but the easiest way to get it is to sign up, to have it delivered via email every week to your inbox, just go to nuclear hot seat.com. Look for the yellow opt-in box, put in your first name and your email address, and you'll get nuclear hot seat as soon as it posts every week. Now, if you have a story lead, a hot tip or suggestion of someone to interview, send an email to info@nuclearhotseat.com. And if you appreciate weekly verifiable news updates about nuclear issues around the world, take a moment, go to the website, click on the red button, follow the prompts, do what you can to support us. It's always appreciated and it's always put to good use. This episode of nuclear hot seat is copyright 2021 libi Halevi and hardest street communications, all rights reserved, but fair use allowed. As long as proper attribution is provided. This is Leiby Halevi of heart history, communications, the heart of the art of communicating, reminding you that radioactive nuclear waste is for forever. So let's stop making any more of it. Right now. There you go. You have just had your nuclear wake-up call. So whatever you do, don't go back to sleep because we are all in the nuclear hot seat.

Announcer

05:58:28

Ooh, Claire hot seat. What are those people thinking Claire? Hotsy what have those boys been braking clear, hot. See Ms. Sinking. Our time to act is shrinking, but Hotsy, it's the bomb.