

Issue 51, 2013



NEWSLETTER **TERRORISM**

E-Journal for CBRNE-CT First Responders



DIRTY NEWS

Humanity defeated ...
Does it matter
who released them?



www.cbrne-terrorism-newsletter.com

Fukushima radioactive plume to reach U.S. next year

Source: <http://www.homelandsecuritynewswire.com/dr20130829-fukushima-radioactive-plume-to-reach-u-s-next-year>



The radioactive ocean plume from the 2011 Fukushima nuclear plant disaster will reach the shores of the United States within three years from the date of the incident, but is likely to be harmless, according to new paper in the journal *Deep-Sea Research*¹. While atmospheric radiation was detected on the U.S. west coast within days of the incident, the radioactive particles in the ocean plume take considerably longer to travel the same distance.

In the paper, researchers from the Center of Excellence for Climate System Science and others used a range of ocean simulations to track the path of the radiation from the Fukushima incident.

The models identified where it would likely travel through the world's oceans for the next ten years.

"Observers on the west coast of the United States will be able to see a measurable increase in radioactive material three years after the event," said one of the paper's authors, Dr. Erik van Sebille.

"However, people on those coastlines should not be concerned as the concentration of radioactive material quickly drops below World Health Organization (WHO) safety levels as soon as it leaves Japanese waters."

A University of South Wales release reports that two energetic currents off the Japanese coast — the Kuroshio Current and the Kurushio Extension — are primarily responsible for accelerating the dilution of the radioactive material, taking it well below WHO safety levels within four months.

Eddies and giant whirlpools — some tens of kilometres wide — and other currents in the open ocean continue this dilution process and direct the radioactive particles to different areas along the U.S. west coast.

"Although some uncertainties remain around the total amount released and the likely concentrations that would be observed, we have shown unambiguously that the contact with the north-west American coasts will not be identical everywhere," said Dr. Vincent Rossi.

"Shelf waters north of 45°N will experience higher concentrations during a shorter period, when compared to the Californian coast. This late but prolonged exposure is due to the three-dimensional pathways of the plume. The plume will be forced down deeper into the ocean toward the subtropics before rising up again along the southern Californian shelf."



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Interestingly, the great majority of the radioactive material will stay in the North Pacific, with very little crossing south of the Equator in the first decade. Eventually over a number of decades, a measurable but otherwise harmless signature of the radiation will spread into other ocean basins, particularly the Indian and South Pacific oceans.

“Australia and other countries in the Southern Hemisphere will see little if any radioactive material in their coastal waters and certainly

not at levels to cause concern,” Dr. van Seville said.

“For those interested in tracking the path of the radiation, we have developed a website to help them.

“Using this Web site, members of the public can click on an area in the ocean and track the movement of the radiation or any other form of pollution on the ocean surface over the next ten years.”

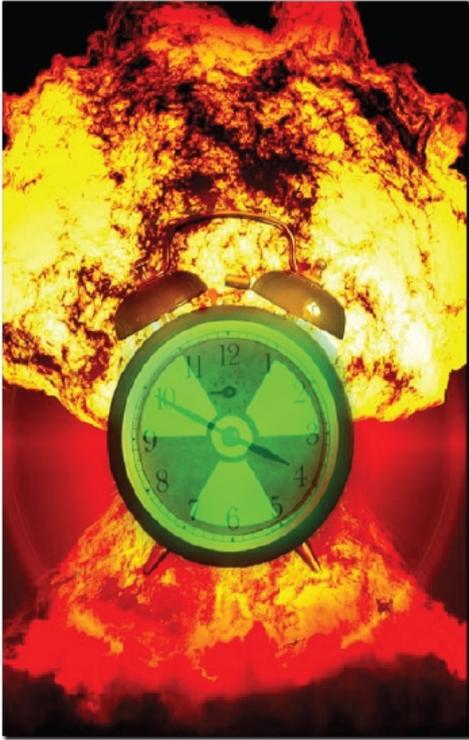
— Read more in Vincent Rossi et al., “Multi-decadal projections of surface and interior pathways of the Fukushima Cesium-137 radioactive plume,” *Deep Sea Research, pt. 1: Oceanographic Research Papers* 80 (October 2013): 37–46



DomPrep Journal

US Annual \$100 Volume 9 Issue 8, August 2013

RADIATION



The Pursuit of Nukes: No Job for Amateurs
By Richard Schoeberl, Law Enforcement

Radioactive Sources – An Invisible Hazard
By Stephen Jolly, Emergency Management

Nuclear Meltdown –
The Need for Timely & Honest Information
By Janette D. Sherman & Joseph J. Mangano, CIP-R

Hospital Decontamination –
High Costs & Limited Benefits
By Craig DeAtley, Health Systems

Insider Threats: A Call for Greater Vigilance
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Special Decontamination
Considerations: Bridging the Gap
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Staple Foods, Grain Tonnages & Daring Rescues
By Joseph Cahill, Fire/HazMat

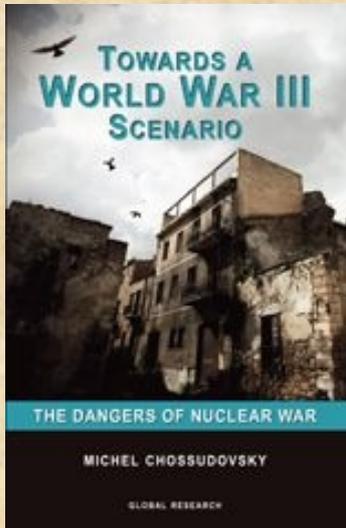
Passenger Air Travel – When the Bullets Run Out
By Clay W. Biles, Transportation

Since 1998, Integrating Professional Communities of Homeland Security, Preparedness, Response & Recovery



NEW BOOK: Towards a World War III Scenario: The Dangers of Nuclear War

Source: <https://store.globalresearch.ca/store/towards-a-world-war-iii-scenario-the-dangers-of-nuclear-war/>



Author Name: Michel Chossudovsky

ISBN Number: 978-0-9737147-5-3

Year: 2012

Pages: 102

“Professor Chossudovsky’s hard-hitting and compelling book explains why and how we must immediately undertake a concerted and committed campaign to head off this impending cataclysmic demise of the human race and planet earth. This book is required reading for everyone in the peace movement around the world.”

Francis A. Boyle, Professor of International Law, University of Illinois College of Law

The US has embarked on a military adventure, “a long war”, which threatens the future of humanity. US-NATO weapons of mass destruction are portrayed as instruments of peace. Mini-nukes are said to be “harmless to the surrounding civilian population”. Pre-emptive nuclear war is portrayed as a “humanitarian undertaking”.

While one can conceptualize the loss of life and destruction resulting from present-day wars including Iraq and Afghanistan, it is impossible to fully comprehend the devastation which might result from a Third World War, using “new technologies” and advanced weapons, until it occurs and becomes a reality. The international community has endorsed nuclear war in the name of world peace. “Making the world safer” is the justification for launching a military operation which could potentially result in a nuclear holocaust.

Nuclear war has become a multibillion dollar undertaking, which fills the pockets of US defense contractors. What is at stake is the outright “privatization of nuclear war”.

The Pentagon’s global military design is one of world conquest. The military deployment of US-NATO forces is occurring in several regions of the world simultaneously.

Central to an understanding of war, is the media campaign which grants it legitimacy in the eyes of public opinion. A good versus evil dichotomy prevails. The perpetrators of war are presented as the victims. Public opinion is misled.

Breaking the “big lie”, which upholds war as a humanitarian undertaking, means breaking a criminal project of global destruction, in which the quest for profit is the overriding force. This profit-driven military agenda destroys human values and transforms people into unconscious zombies.

The object of this book is to forcefully reverse the tide of war, challenge the war criminals in high office and the powerful corporate lobby groups which support them.

Reviews

“This book is a ‘must’ resource – a richly documented and systematic diagnosis of the supremely pathological geo-strategic planning of US wars since ‘9-11’ against non-nuclear countries to seize their oil fields and resources under cover of ‘freedom and democracy’.”

John McMurtry, Professor of Philosophy, Guelph University

“In a world where engineered, pre-emptive, or more fashionably “humanitarian” wars of aggression have become the norm, this challenging book may be our final wake-up call.”

Denis Halliday, Former Assistant Secretary General of the United Nations

Michel Chossudovsky exposes the insanity of our privatized war machine. Iran is being targeted with nuclear weapons as part of a war agenda built on distortions and lies for the



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purpose of private profit. The real aims are oil, financial hegemony and global control. The price could be nuclear holocaust. When weapons become the hottest export of the world's only superpower, and diplomats work as salesmen for the defense industry, the whole world is recklessly endangered. If we must have a military, it belongs entirely in the public sector. No one should profit from mass death and destruction.

Ellen Brown, author of 'Web of Debt' and president of the Public Banking Institute

10 Things You Probably Didn't Know Were Radioactive

Source: <http://listverse.com/2013/02/06/10-things-you-probably-didnt-know-were-radioactive/>

We all know the obvious things that produce radiation: nuclear power plants, microwaves, atomic bombs, and holidays to certain parts of the Ukraine. However, it's the less-obvious things that you've got to watch out for.

10



Brazil Nuts

The Brazil nut is one of the most radioactive foods in the world; however, don't think that eating several handfuls of them will give you superpowers. It won't (we tried). Instead, as one unfortunate obsessive nut eater found, doing this will just make your poop and urine extremely radioactive. The reason for this radioactivity is simple: the roots of the tree that produce the Brazil nut grow so deep into the ground that they absorb massive levels of radium, a naturally-occurring source of radiation.

9



Grand Central Station

New York City's Grand Central Station is one of the largest railway stations in the world. It's also, as many of the commuters that pass through it might be worried to know, one of the most radioactive. This is because many of the walls of the station, as well as its foundations, were built using granite, a rock capable of holding natural radiation. In fact, the radiation levels produced by the station are so high that they actually exceed the levels

that nuclear power plants are legally allowed to emit.

8



Living in Denver

It's a scientific fact that the higher in altitude you go, the more exposure to forms of cosmic radiation you receive. You can blame the Earth's atmosphere for this: the atmospheric layer that surrounds the Earth gets thinner with the closer you get to it and, therefore, provides less protection to the people underneath it. This is a problem for the residents of Denver, as their city is approximately one mile above sea level. As a result, its population is

blasted by twice as much radiation as those living at sea levels. Weirdly, however, this isn't having an ill-effect on their health: one study found that populations who live at mountain elevations live longer and have healthier lives, proving that instead of superpowers, all this cosmic radiation might be causing people to develop super healing powers.



7



Exit Signs

If you're attending school or college, or work in an office, you have probably noticed the glowing exit signs dotted around the place. As they're designed to be used during disasters to guide people to safety, they aren't connected to the main power source of the building, as obviously everyone inside the building would be trapped in darkness if the power went out. So how do they

generate this light? Long-life batteries? Hamsters on treadmills? No, sadly; instead, the light is generated by the samples of a radioactive isotope of hydrogen called tritium contained inside the sign. Unfortunately, however, if that same disaster that cut the power also causes that sign to smash, that same radioactive isotope can escape and contaminate the building and everyone in it.

6



Kitty Litter

If, for some reason, you ever feel the compulsion to perform a swan-dive into your cat's litter box, you might want to reconsider your decision. Aside from the fact that it's disgusting to even think that would be a good idea, kitty litter is one of the most common sources of radiation in your home. That's because one of its major components is bentonite clay, a type of

... well, clay, that's great for soaking up poop and urine, but awful at not containing traces of naturally-occurring uranium and thorium. Which it does. Even worse, thanks to the way in which we just dump thousands of tons of cat litter in landfills each year, there's a danger that this radiation might eventually spread to our groundwater.

5



Bananas

Bananas, like Brazil nuts, produce small quantities of radiation. But, whereas in the case of the Brazil nut this is the result of the tree soaking up radiation from the ground, Bananas suffer from this because it's written into their genetic code. Before you start burying your bananas in a lead-lined coffin though, you should probably be aware that you'd have to eat roughly 5,000,000 of the things to get anything near radiation sickness.

And, by that point, it'd all be moot anyway because there's a chance you would have turned into a banana yourself. Nevertheless, this radiation is still detectable to Geiger counters, so much so that taking a hand of bananas through a radiation sensor at any border checkpoint would be enough to set the alarms off.

4



Granite Kitchen Worktops

So, let's say we've scared you into vowing never to eat bananas or Brazil nuts ever again. Your body is now a temple to clean non-radioactive living. However, if you've got a granite worktop in your kitchen, then there's a good chance that nearly every piece of food that's been prepared on it has been subjected to radiation. If you



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remember the story about Grand Central station, you'll know why: it's because granite is an excellent rock for retaining naturally-occurring radiation.

3

**Cigarettes**

It won't surprise you to learn that cigarettes are bad for you; after all, that's what all those PSAs on TV say and everything on TV is true. Many cigarettes contain radioactive materials such as polonium-210 (the same radioactive isotope used to assassinate Alexander Litvinenko) and lead-210; as reasons to quit go, this is a big one. These materials, which survive in the tobacco leaves throughout the cigarette production process, are released into the air as a vapor when the cigarette is lit and inhaled into by the smoker. Although these materials are released at low concentrations, however, deposits of these chemicals can accumulate significantly in the organs of medium-to-heavy smokers and are thought to be linked to the development of certain cancers.

2

**Old Pottery and Glassware**

It might have been sweet of your grandma to leave you all those old vases and pieces of glassware in her will, but don't be fooled: you need to go and get rid of them immediately, sentiment be damned. Many items of pottery produced before 1960—mainly those with a orange or red colour—contain high levels of uranium, on account of it being mixed into the glaze that gives the pieces that distinctive color. Likewise, if you've got any items of antique glass with a greenish-color, they also contain uranium. Needless to say, we don't recommend drinking from those items anymore especially given that much old porcelain also leaks lead.

1

**Glossy Magazine Paper**

If a magazine publisher wants to blow some money, it might start printing onto glossy paper, mainly because it looks nicer, but also because they think consumers are part-magpie and therefore more likely to buy something if it's shiny. However, getting paper to look that sleek and glossy requires it to be covered in kaolin, a type of white clay. Like the clay that forms kitty litter, this clay is also capable of holding radioactive elements such as uranium and thorium. This clay is also used commonly as a food additive and as an ingredient in many over-the-counter drugs.



Alabama State launches Nuclear Academy

Source: <http://www.homelandsecuritynewswire.com/dr20131001-alabama-state-launches-nuclear-academy>

A new academy at Alabama State University (ASU) will enhance security at nuclear, electric, and green-energy power installations across the United States and abroad. The new academy will provide comprehensive training for current and future security professionals who will offer infrastructure protection services to nuclear, electric and green-energy power installations.

Alabama State University has teamed with Charlotte, North Carolina-based security services company Total Protection Services (TPS) to launch a nuclear protection academy (the Academy or NuclearPro) to train and educate nuclear and energy facility security professionals worldwide.

The ASU and TPS public/private sector partnership was announced by ASU Board of Trustees chairman Elton N. Dean after the vote and approval of the Board. An ASU release reports that this is a first-of-its-kind initiative to provide comprehensive training for current and future security professionals who will offer infrastructure protection services to nuclear, electric and green-energy power installations.

The new ASU Academy aims to enhance the protection of nuclear and energy power plants across the United States and in other energy-producing countries.

The initiative is in response to the events of 9/11 and other global crises that have created an increased demand for both private and public sector safety and security, said Phrantceena Halres, TPS chairwoman.

"Today's standardized security training just isn't getting done well enough outside of the largest federal agencies and the military. There is no true industry standard for security instructional programs," Halres said.

She said that many of TPS's security specialists are recruited directly from the ranks of the U.S. military, law enforcement agencies, and the nuclear security industry and government security services.

TPS's partnership with ASU will provide it and other security nuclear companies with a steady pipeline of highly trained security professionals, while also providing ASU students and other enrollees with unique career placement opportunities, Dean said.

"Our partnership with TPS is another demonstration of ASU's 146 years of dedication and commitment to progress, promise, excellence, and service to America. It will help the University become the recognized educational leader in this pivotal area of national security," Dean said.

Nuclear power industry embraces ASU Academy

In a letter to the ASU Board of Trustees earlier this month, Stephen Kuczynski, chairman, CEO and president of Southern Nuclear Operating Company Inc., expressed his company's support for the Academy. Kuczynski said that TPS plays "a vital role in protecting our nation's most critical infrastructures, including nuclear power plants. Halres has learned a great deal working in the nuclear industry about how to protect critical infrastructures and has designed the Nuclear Pro Academy as a vital resource to continue the education of nuclear security practitioners." Constellation Energy Nuclear Group, the nuclear power generation partner of EDF (America's top provider of electrical power), also lauded the establishment of the Academy. Henry B. Barron, president and chief executive officer of the Constellation Energy Nuclear Group, informed ASU trustees this month that Constellation looks forward to working with ASU and TPS "to make NuclearPro a preeminent training facility for security practitioners nationally and abroad."

NuclearPro to be located on ASU's campus

The release notes that NuclearPro will be housed on the ASU campus and will be operated by TPS. When launched, online registration will be available for classes at TPS's headquarters in Charlotte, North Carolina, and at ASU. Customized on-site security training also will be available for individuals and businesses in the U.S. and abroad.

ASU graduate Corenthis B. Kelley, who served the U.S. Nuclear Regulatory Commission as director of the Office of Small Business and Civil Rights until her retirement at the end of



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2011, will spearhead the University's efforts to ensure the long-term financial viability of the program. Classes are planned to begin in

August 2014 at the Charlotte, N.C., and ASU locations with monthly classes following.

Houston – we need some plutonium

Source: <http://blogs.fas.org/sciencewonk/2013/09/houston-need-plutonium/>

The outer Solar System is a dark and lonely place – solar energy drops off with the inverse square of distance to the Sun so a spaceship in orbit around Jupiter (5.5 times as far from the Sun as the Earth) receives only about 3% as much solar energy as one orbiting Earth. Solar panels do a great job of powering spacecraft out about as far as Mars but anything sent to the outer reaches of the Solar System needs to find some other source of power. For most spacecraft this means using plutonium – specifically the isotope Pu-238. And according to some recent reports, we might be running out this particular flavor of plutonium. Since we can't visit the outer solar system on solar power and batteries have a limited lifespan, if we want to go past the asteroid belt we've got to go nuclear with either radioisotope thermoelectric generators (RTGs) or reactors. And according to a NASA scientist (quoted in the story linked to above) we are running out of Pu-238 – if we don't take steps to either replenish our stocks or to develop an alternative then our deep space exploration might grind to a halt. But before getting into that, let's take a quick look at why Pu-238 is such a good power source.

As with any other element, plutonium has a number of isotopes – Pu-239 is the one that fissions nicely enough to be used in nuclear weapons, and the slightly heavier version (Pu-240) also fissions nicely. These heavier plutonium isotopes are both produced in nuclear reactors when U-238 captures a neutron or two – any operating reactor produces them and, for that matter, fissioning these plutonium isotopes produces a significant amount of energy in any nuclear reactor. Pu-238 is also produced in reactors, but through a slightly more convoluted pathway. The bottom line is that useable quantities of plutonium – fissionable or non – are produced in reactors.

What makes Pu-238 valuable is that it decays away quite nicely and produces a boatload of energy when it decays – it has a long enough half-life (just a tad less than 88 years) to last for decades and it gives off a high-energy alpha

particle (for those who are interested, the alpha energy is over 5.5 MeV).

So let's look at how this is turned into energy. Plutonium-238 has a half-life of 87.7 years and a decay constant (a measure of the fraction of Pu-238 atoms that will decay in a year) of 0.0079. To get a bit geekish, if we can calculate the number of atoms in a kg of Pu-238 then we can multiply the number of atoms by the decay constant to figure out how many decays will occur in a given period of time. A kg of Pu-238 has about 2.5×10^{23} atoms – multiply this by the decay constant and we find that there should be about 2×10^{22} atoms decaying every year; a year has about 3.1×10^7 seconds so this will give a decay rate of about 6.4×10^{14} atoms every second. And since each decay carries with it about 5.5 million electron volts (MeV), 1 kg of Pu-238 produces 3.5×10^{15} MeV every second. Doing some unit conversions gives us an energy production of about 550 joules per second – one J/sec is 1 watt, so each kilogram of Pu-238 produces 550 watts of power. A 5-kg RTG (like the one that's powering the Curiosity rover on Mars) will put out nearly 3 kW of thermal power. This is enough heat that a sufficiently large mass of Pu-238 will glow red-hot; captured, it can be transformed into electricity to power the spacecraft – with a 5% conversion efficiency from thermal to electrical energy, this 10 kg of Pu will produce about 150 watts of electrical power. There are more efficient ways of turning heat into electricity, but they all have their limitations or are untried technologies.

This is where the Pu-238 half-life comes into play – it will take 87.7 years for 50% of the Pu-238 (and for power production to drop by half), so power will drop by only about 0.8% in a year. The Pu-238 half life is short enough to make for a furious decay rate – enough to produce the power needed to run a spaceship – but long enough to last for the decades needed to reach Pluto (the destination of the New Horizons ship) or to linger in orbit around Jupiter and Saturn (*a la* Galileo and Cassini).



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Without RTGs powered by Pu-238 we can't explore much beyond the asteroid belt. This is why the possible exhaustion of our stocks of this nuclide so alarms Adams. According to Adams, NASA has already delayed or cancelled a number of planned missions to the outer Solar System, including a mission to study Europa, whose oceans are considered a prime candidate as an abode for life outside of Earth. The Department of Energy estimates that an annual outlay of \$20 million or less would be enough to supply NASA's Pu-238 needs, but this amount has not been forthcoming.

The space program is controversial and has been controversial for a half-century. Some decried the spending on Apollo, in spite of the fact that it gave us humanity's first steps on another world. The Shuttle program also came under fire for a number of reasons, as has the International Space Station. And unmanned programs have been criticized as well. The common thread in most of this criticism is a matter of money – asking why in the world we should spend billions of dollars to do something that doesn't provide any tangible benefit to those of us on Earth. Those making this argument are those who are reluctant to spend (or waste, as they'd put it) a few tens of millions of dollars annually to power the spacecraft that could help us learn more about our cosmic neighborhood.

The economic argument is hard to refute on economic grounds – there's no denying that close-up photos of Saturn's rings or Titan's hydrocarbon seas haven't fed a single hungry person here at home. And for that matter, even finding life on Mars (or Europa) will not feed the hungry here on Earth. But there has got to be more to life than simple economics – if not then there would be no need for art, for music, for

sports, or for any of the other things we do when we're not working, eating, sleeping, or attending to personal hygiene.

Discussing the relative merits of "pure" science is beyond the scope of this post (although I did discuss it in an earlier post in this blog). But I think it's worth pointing out that the public showed a genuine interest in the exploits of the Voyager probe, the Galileo mission, and the Cassini craft – not to mention the missions to Mars, Venus, and elsewhere. I'd like to think that the deep space program is worth another few tens of millions of dollars a year for the entertainment value alone – especially given the vast sums that are spent on movies and TV shows that are watched by fewer people and that provide little in the way of enlightenment or uplifted spirits.

One other point that's worth considering is that NASA's outer Solar System missions are billion-plus dollar missions and the cost of plutonium is a small fraction of this amount. While not a major part of the nation's economy, NASA programs employ a lot of people throughout the US to design and build the machines and the rockets that loft them into space, not to mention everyone who works to collect and analyze the data as it comes to Earth. That our deep-space capacity and those who keep it running might grind to a halt for lack of a few tens of millions of dollars of plutonium is a shame. The loss of everything else that goes along with our space program – the influx of new knowledge, the cool pictures, the sense of pride that we can send a working spacecraft so far and can keep it working so long, and the sense of wonder that comes from considering (even if only for a short time) our place in the universe – losing this for want of a little plutonium would be a crime.

Preventing nuclear terrorism

Source: <http://www.homelandsecuritynewswire.com/dr20131004-preventing-nuclear-terrorism>

Nuclear terrorism remains a real and urgent threat. Despite an array of mechanisms established to combat this threat, several serious problems persist, requiring relentless attention and actions by the United States, Russia, and other responsible nations. These problems include continuing nuclear security vulnerabilities in a number of countries and the continued incidents of illicit trafficking in nuclear

materials, radioactive sources, and the various components.

A Harvard Kennedy School release reports that to address these concerns, a new report, Steps to Prevent Nuclear Terrorism: Recommendations Based on the U.S.-Russia Joint Threat Assessment, has been produced jointly by researchers at Harvard



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Kennedy School's Belfer Center for Science and International Affairs and the Russian Academy of Sciences' Institute for U.S. and Canadian Studies (ISKRAN). The study

response, and other areas to improve their ability to detect, prevent, disrupt, and recover from acts of nuclear terrorism. The proposed actions involve joint, parallel, and cooperative

Preventing Nuclear Proliferation and Nuclear Terrorism – Key Initiatives

- **Lead international efforts to bolster nuclear non-proliferation regime**
 - Strengthen IAEA safeguards and enforce compliance
 - Increase DOE non-proliferation programs by 25 percent (to \$2.7 billion)
- **Accelerate efforts to secure all vulnerable nuclear materials worldwide in four years**
 - Enhance capabilities to detect and interdict smuggled nuclear materials
- **Reaffirm U.S. commitment to fulfill NPT obligations including Article VI**
 - New START, Comprehensive Nuclear Test Ban Treaty, Fissile Material Cutoff Treaty
 - Comprehensive national R&D program on verification
- **Renew U.S. commitment: to "hold fully accountable any state, terrorist group, or non-state actor that supports or enables terrorist efforts to obtain or use WMD"**

actions with other countries. They include creation of bilateral task forces to improve efforts to defeat nuclear terrorism, coordinate actions in the face of a future nuclear terrorism event, and study past examples of stolen material to prevent future such occurrences. The report also includes recommendations for specific standards for each country to work toward in nuclear security and

outlines concrete steps for the United States and Russia to take in leading international efforts to combat the threat of nuclear terrorism. The report was released at an event at the EastWest Institute in New York on Wednesday, 2 October, with a follow-up event scheduled at Harvard Kennedy School today (Friday), 4 October.

In 2011, Belfer Center and ISKRAN published the "U.S.-Russia Joint Threat Assessment on Nuclear Terrorism," which analyzed the means, motives, and access of would-be nuclear terrorists, and concluded that the threat of nuclear terrorism is urgent and real. Building on that study, this new report analyzes the existing framework for action, cites gaps and deficiencies, and makes specific recommendations for improvement.

The new study argues that the United States and Russia should jointly take a number of concrete and urgent actions in nuclear security, intelligence, law enforcement, emergency

suggestions for working with other countries to improve nuclear security worldwide.

The release notes that the new study results from a nearly three year-long partnership by nuclear security experts from Harvard Kennedy School's Belfer Center for Science and International Affairs and the Russian Academy of Science's Institute for U.S. and Canadian Studies in Moscow. The report's authors include retired senior military officers, government officials and academics from both countries.

The foreword of the new report was written by the Elbe Group, made up of retired U.S. and Russian senior military and intelligence officers; veterans from the FSB, GRU, CIA, DIA, Ministry of Defense, and Department of Defense. The purpose of the Elbe Group is to maintain an open and continuous channel of communication on sensitive issues of U.S.-Russian including the threat from nuclear terrorism.

— Read more in Matthew Bunn et al., *Steps to Prevent Nuclear Terrorism: Recommendations Based on the U.S.-Russia Joint Threat Assessment* (Belfer Center, Kennedy School of Government, Harvard University, October 2013)



CBRNE-Terrorism Newsletter – October 2013**Jellyfish attack shuts down Swedish nuke**

Source: <http://www.homelandsecuritynewswire.com/dr20131002-jellyfish-attack-shuts-down-swedish-nuke>

The Oskarshamn nuclear plant in southeastern Sweden, one of the world's largest nuclear power plants, was forced to shut down when it was attacked by a large cluster of jellyfish.

SFGate reports that on Sunday, operators of the plant had to scramble reactor number three after a cluster of jellyfish, weighing several tons, clogged the cooling pipes which carry

are familiar. In California last year, the Diablo Canyon nuclear plant was forced to shut its reactor two after gobs of sea salp — a gelatinous, jellyfish-like organism — clogged intake pipes. In 2005, the first unit at Oskarshamn had to be turned off after jellyfish clogged its cooling pipes.

Marine biologists are not surprised to see these



water to keep the core of the reactor cool. The 1,400 megawatt reactor is the world's largest boiling-water reactor (BWR). Japan's Fukushima Daiichi plant was also a BWR. Anders Osterberg, a spokesman for OKG, the plant operator, said that early yesterday (Tuesday) the plant's engineers were finally able to remove the last of the jellyfish from the cooling pipes and restart the reactor. *SF Gate* notes that experts note that jellyfish is a problem with which nuclear plant operators

jellyfish shutdowns.

"It's true that there seems to be more and more of these extreme cases of blooming jellyfish," said Lene Moller, a researcher at the Swedish Institute for the Marine Environment. "But it's very difficult to say if there are more jellyfish, because there is no historical data."

The species that caused the problem at Oskarshamn is known as the common moon jellyfish.

"It's one of the species that can bloom in extreme areas that ... are overfished or have bad conditions," said Moller. "The moon jelly likes these types of waters. They don't care if there are algae blooms, they don't care if the oxygen concentration is low. The fish leave ... and (the moon jelly) can really take over the ecosystem



CBRNE-Terrorism Newsletter – October 2013**Where does the plutonium come from?**

Source: <http://blogs.fas.org/sciencewonk/2013/09/plutonium-come/>

Last week I wrote about how the shortage of Pu-238 might impact the exploration of the outer Solar System, but I didn't much get into where the plutonium comes from. After all, while there are trace amounts of natural plutonium, there certainly isn't nearly enough to fuel a space probe. So this week it seemed as though it might be worth going over where we get our plutonium, if only to understand why NASA (or DOE) needs tens of millions of dollars to produce it.

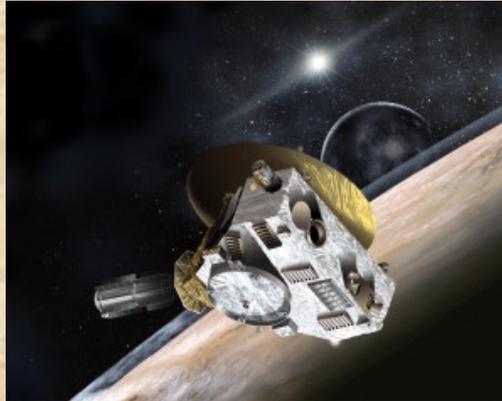
On the Periodic Table plutonium is two spots above uranium – uranium has an atomic number of 92 (that is, it has 92 protons) and plutonium is at 94. To make plutonium we somehow have to add two protons to a uranium atom. The way this happens is sort of cool – and there are different routes depending on the plutonium isotope that's being produced.

To make Pu-239, the nuclide used in nuclear weapons, it's a fairly simple process. Natural uranium is over 99% U-238, which doesn't fission all that well. Put the U-238 (which makes up a minimum of 95% of the reactor fuel) into the middle of a reactor, which is seething with neutrons from uranium fission, and it will capture a neutron and turn into U-239. The U-239, in turn, decays by emitting a beta particle to neptunium-239, which gives off another beta particle. Since each beta decay turns a neutron into a proton, these two beta decays suffice to turn a uranium atom into one of plutonium. Thus, a single U-238 atom absorbing a single neutron and being allowed to sit long enough to undergo two beta decays (a few weeks or so) will turn into a single atom of Pu-239. Making heavier plutonium nuclides is just as easy – when Pu-239 captures additional neutrons it turns into Pu-240, Pu-241, Pu-242, and more. Not only is it fairly easy, but it happens all the time in any operating nuclear reactor.

OK – so we can see how simple neutron capture and patience can give us plutonium

nuclides heavier than U-238, but this really doesn't help us to make the Pu-238 needed to power a spacecraft. Making the lighter nuclide is a little more roundabout.

Remember that, through neutron capture, a reactor produces Pu-241. It turns out that Pu-241 also decays by beta emission, creating Am-241 – the stuff that's used in smoke detectors (among other things). Am-241 is an alpha emitter and it decays to a lighter variety of neptunium (Np-237) which, when subjected to neutron irradiation, captures a neutron to become Np-



238. One final transformation – a last beta decay – is the last step to producing Pu-238. This is the reason why Pu-238 is so expensive – making it requires two bouts of irradiation (the first long enough to produce the Pu-241), enough time for all of the radioactive decays to transform plutonium into americium and the americium into neptunium, and several steps of chemical processing to isolate the various elements of interest that are formed.

Although it sounds convoluted (well, I guess it is convoluted), making Pu-238 is fairly straightforward. The science and engineering are both well-known and well-established, and its production certainly breaks no new scientific or technical ground. But the politics...that's another matter altogether.

As I mentioned last week, the American Pu-238 production line shut down over two decades ago. Since then we've been buying it from the Russians, but they've got their own space program and have limited stocks to boot. So this option is not going to work for much longer, regardless of the future of US-Russian international relations.

A recent blog posting by Nuclear Watch suggested that the US might be able to meet its Pu-238 needs by dismantling nuclear weapons and by digging into its inventory of scrap Pu-238 – it notes that the Los Alamos National Laboratory (LANL) documents indicate that over 2000 RTGs' worth of the nuclide can be



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recovered from nuclear weapons alone. But I'm not sure if I can accept this assertion, primarily because putting this nuclide into a nuclear weapon makes absolutely no sense. I can't comment on the "scraps" of Pu-238 that LANL is said to have lying around, and unfortunately Nuclear Watch didn't provide a link to the LANL documents they cited, making it difficult to check or to comment further. But if there is a Pu-238 stockpile at LANL it would certainly be nice to tap it for space exploration – not to mention the savings in disposal costs.

Yet another way to make Pu-238 is in a liquid fluoride thorium reactor (LFTR) – a reactor that uses naturally occurring thorium (Th-232) to breed U-233, which fissions quite nicely. Additional neutron captures can turn U-233 into Pu-238, which can be chemically separated from the fuel. There's a lot more to the topic than this, but I covered the topic of thorium reactors fairly thoroughly last year and it's also covered on the Thorium Energy Alliance's website. There are a lot of nice things about thorium reactors in addition to their being able to produce Pu-238, and it's a technology that's been worked out and tested – but the US shows no sign of building any of them anytime soon. India and China might develop extensive thorium reactor systems – but what these

nations might do a decade or two in the future won't do much for NASA in the next few years. The bottom line is that, however promising they might be for future needs, thorium reactors aren't likely to help us send more spacecraft to the outer Solar System anytime soon.

So here's where we stand. The US stopped producing the Pu-238 needed to run our deep-space probes and we've pretty much used up our stocks of the material. In the intervening years we've been buying Russian Pu-238, but that won't be available for much longer, leaving us high and dry. There may be scraps of the material – possibly even stockpiles – at various DOE facilities, but dismantling nuclear weapons is probably not going to do the job. Over the long run thorium-cycle reactors might be a great way to make it, but these reactors aren't operating anywhere in the world today and there are no American plans to build any of them anytime soon. That would seem to leave us with only three options – re-start our Pu-238 production line, find another way to make (or obtain) the material, or confine ourselves to the inner Solar System. As I mentioned last week, I sincerely hope we don't go the last route. So let's see what we can come up with – and let's hope we don't leave the solution (and decisions) too long.

Costly DOE uranium processing facility questioned

Source: <http://www.homelandsecuritynewswire.com/dr20131007-costly-doe-uranium-processing-facility-questioned>

The cost of a proposed Department of Energy's uranium processing facility for nuclear weapons at the Y-12 National Security Complex in Oak Ridge, Tennessee has increase nineteen times – from the original estimate of \$600 million to \$11.6 billion. If these estimates are accurate, the processing facility would entail one the largest investments in the U.S. nuclear weapons infrastructure since the Manhattan Project.

The *Los Angeles Times* notes that this high estimate is that of the Army Corps of Engineers. The Energy Department has not disputed the corps' estimate, even as its own official estimate is \$4.2 billion to \$6.5 billion. A spokeswoman at Y-12 stressed that the corps' estimate was the highest of three outside agency reviews of the project.

The proposal for the facility was unveiled in 2005, and it calls for the development of a

manufacturing plant at the Y-12 National Security Complex to produce new uranium cores for the U.S. stockpile of aging hydrogen bombs.

The Project on Government Oversight (POGO), a Washington, D.C. watchdog group, has issued a report noting the high estimates by the Army Corps of Engineers, and arguing that the work could be done for much less at existing facilities.

The Energy Department, since the end of the cold war, has been facing questions about the increasing cost, and dilapidated state, of the U.S. nuclear weapons complex. Questions have also been raised about the size of the U.S. nuclear weapons stockpile, and the cost of maintaining it.

Peter Stockton, author of the POGO report disputes the need for a new processing facility. Stockton calls for



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considering alternative sites such as the Pantex Plant in Amarillo, Texas. The Pantex Plant has the capacity to “take on one of the most important missions of the would-be Uranium Processing Facility: the recertification of highly enriched uranium secondaries, a key component of a nuclear warhead. Not only would shifting this mission to Pantex save tens of millions of dollars; it would also reduce the transportation of nuclear weapons components across the country and fit well with the Pantex mission. The plant is already doing similar work on plutonium pit re-qualification,” He says. In a report issued last week, scholars at the libertarian Cato Institute say that the cost of the

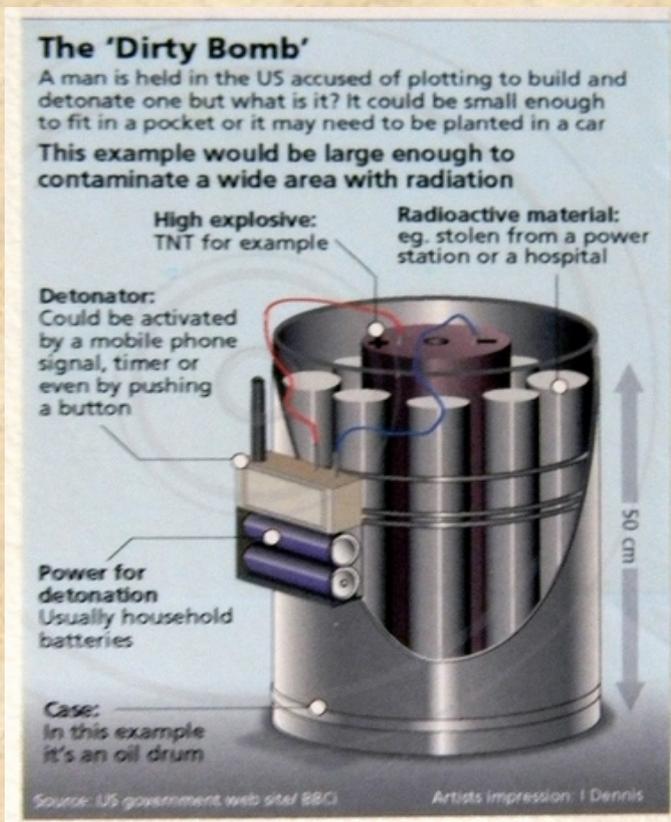
U.S. nuclear force could be reduced by “eliminating the historic reliance on delivering bombs by three different systems: submarines, bombers and land-based missiles.” Cato defense analysts Benjamin Friedman and Christopher Preble suggest that the United States instead should invest in submarine-launched missiles as they are more accurate than land-based missiles and can provide deterrence at a much lower cost. Friedman and Preble also suggest that the Air Force would help save \$20 billion without jeopardizing the U.S. deterrence posture if it did not modernize its fleet of intercontinental ballistic missiles.

— *Read more in Uranium Processing Facility: When You’re in a Hole, Just Stop Digging (Project on Government Oversight, 25 September 2013); and Benjamin Friedman, Christopher Preble, and Matt Fay, The End of Overkill? Reassessing U.S. Nuclear Weapons Policy (Cato Institute, 2013)*

U.S. Cities Unprepared For Nuclear Terrorism

Source: http://gao.gov/assets/660/658336.pdf?utm_source=U.S.+Cities+Not+Ready+for+Nuclear+Terrorism&utm_campaign=ACD+BLOG&utm_medium=email

Many emergency managers from the 27 major



cities responding to GAO's questionnaire, although not all, reported that their city had assessed the risks of a terrorist attack using a

radiological dispersal device (RDD) or improvised nuclear device (IND) and had ranked the risk of these attacks as lower than the risk of other hazards they face. Also, 11 of the 27 reported that they had completed RDD response plans, and 8 of the 27 reported that they had completed IND response plans. Some emergency managers for cities without specific RDD and IND response plans reported that they would rely on their city's all hazards emergency operations plan or hazard management plan if attacked. Most cities that had RDD and IND response plans reported conducting exercises to validate the plans based on federal guidance.

Major cities varied widely in perceptions of their abilities to respond within the first 24 hours of RDD and IND attacks (early response). For example, all 27 cities were perceived by their emergency managers as being able to conduct at least a few of the early response activities after an RDD attack, such as treating casualties, with assistance from other jurisdictions but not federal assistance. Ten of those cities were perceived as not being able to conduct any of the response activities for an IND attack without federal assistance. GAO analysis found that these perceptions were not

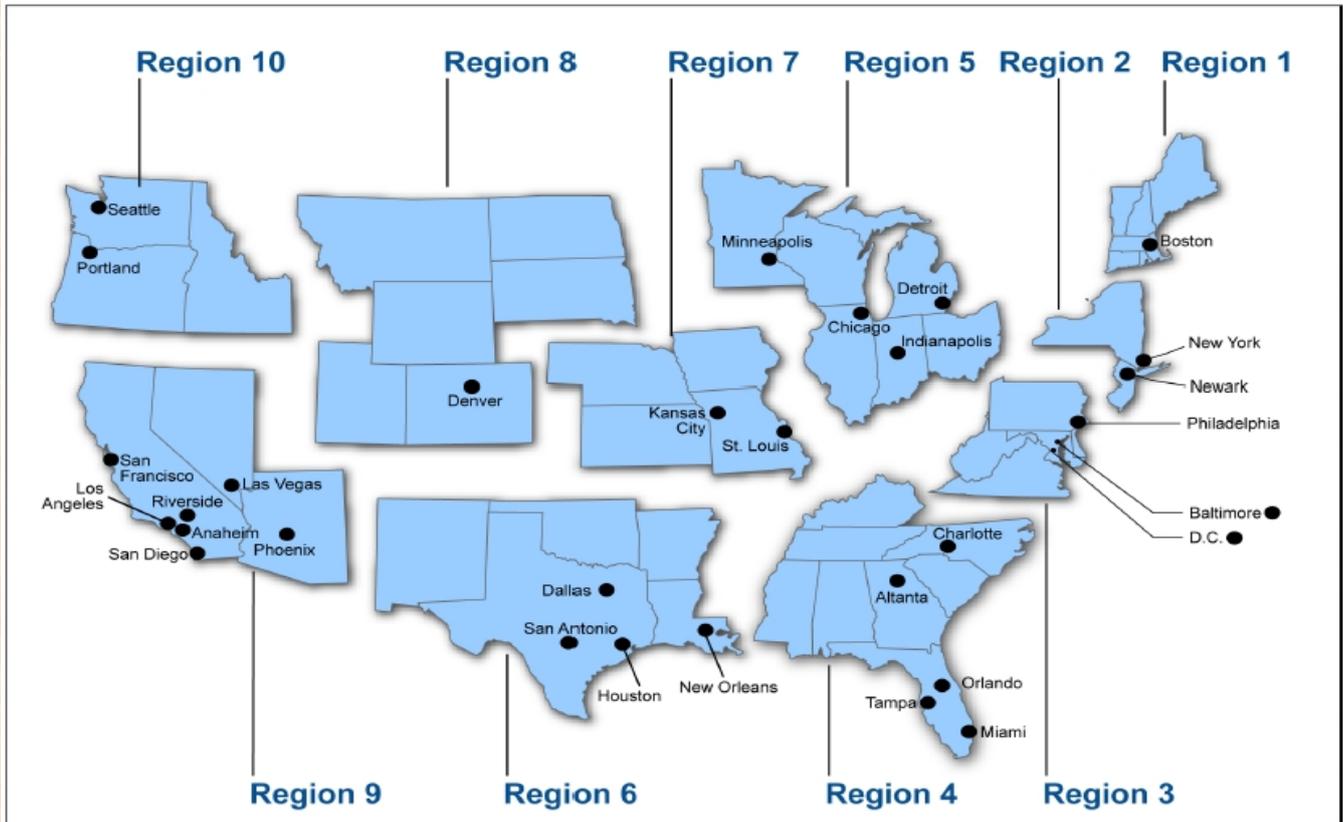


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necessarily related to a city having RDD and IND response plans but rather related to their understanding of nuclear and radiological incidents and the capabilities needed for response according to information obtained from Federal Emergency Management Agency

Most emergency managers reported perceived needs for federal technical and resource assistance to support their cities' early response to RDD (19 of 27 cities) and IND (21 of 27 cities) attacks. However, GAO found that federal guidance on the type and timing of such

Figure 1: Major Cities at High Risk for Terrorist Attack by FEMA Region



(FEMA) officials.

GAO found limited federal planning guidance related to the early response capabilities needed by cities for the large RDD attack depicted in the national planning scenarios. Federal guidance may not be needed, according to FEMA officials, because they expect cities to address a more likely but smaller RDD attack--as they would a hazardous materials spill--with limited federal assistance. More federal planning guidance applicable to cities has been developed for IND response, but this guidance does not detail the early response capabilities needed by cities in relation to other sources of assistance. Without greater awareness of and additional federal guidance on the capabilities needed by cities for early response to these attacks, cities may not have the information they need to adequately prepare for and respond to them. This could lead to complications that result in greater loss of life and economic impacts.

assistance is not readily available or understood by all emergency managers. This condition could lead to a disjointed and untimely response that might increase the consequences of either kind of attack. Emergency managers also reported a need for improved procedures and more information that FEMA is addressing. In addition, most emergency managers reported their city needed federal funding to maintain current capabilities to respond to RDD and IND attacks. According to DHS guidance, response capabilities are developed through planning, training, equipping, and exercising, which are essential elements of an integrated, capability-based approach to preparedness.

Why GAO Did This Study

A terrorist attack in a major city using an RDD or an IND could result not only in the loss of life but also have enormous psychological and

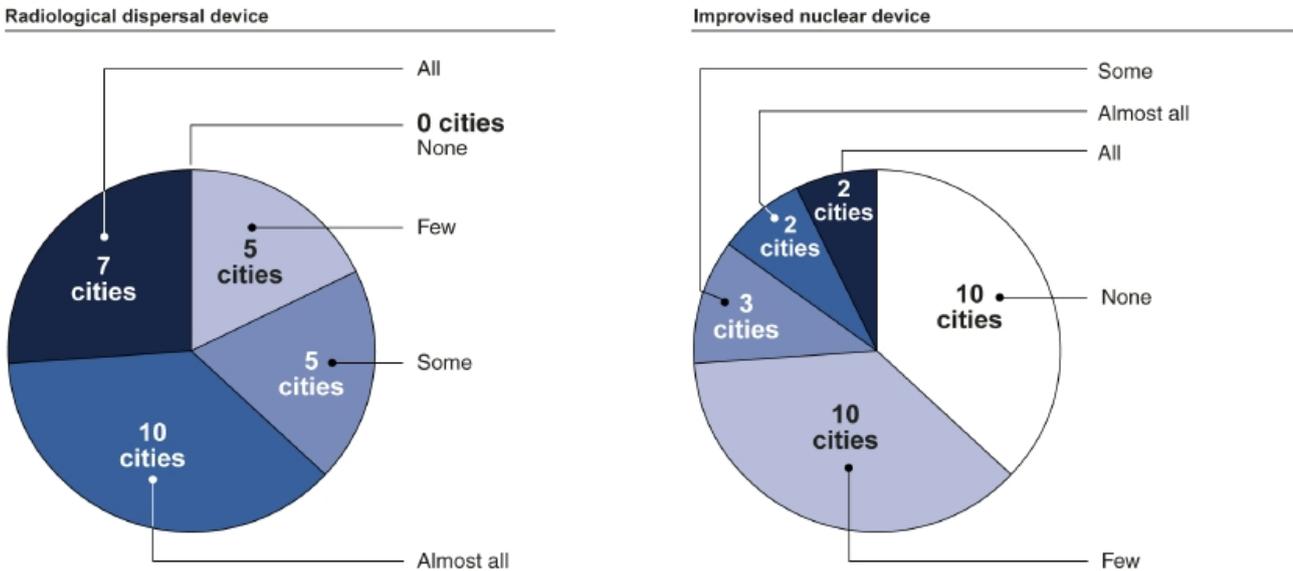


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economic impacts. Major cities are assumed to be preferred targets of such attacks, and local governments, along with their states, have

assessment of RDD and IND risks and development of response plans, (2) perceptions of their abilities to respond within

Figure 3: Amount of Perceived Early Response Ability of 27 Major Cities for Radiological Dispersal Device (RDD) and Improvised Nuclear Device (IND) Attacks



Source: GAO analysis of questionnaire data.

Note: Early response in an RDD or IND attacks refers to the abilities of major cities to respond to such an attack within the first 24 hours. The statements made by emergency managers of 27 cities regarding the response activities they would provide included mutual aid from their state, as well as surrounding jurisdictions, but not response assistance from the federal government.

primary responsibilities for early response (within the first 24 hours), with assistance from federal sources, as necessary, coming later. A disjointed or untimely response could increase the impact and undermine public confidence in federal, state and local governments' ability to respond to an attack.

GAO was asked to review issues related to response preparedness for RDD and IND attacks. This report examines major cities' (1)

the first 24 hours, and (3) perceptions of the need for federal support in early response to these attacks. GAO primarily relied on questionnaire responses from emergency managers of 27 of the 31 major cities that the Department of Homeland Security considers to be at high risk for terrorist attack, the review of pertinent federal guidance, and interviews with FEMA officials and others.

What GAO Recommends

GAO recommends that FEMA develop guidance to clarify the early response capabilities needed by cities for RDD and IND attacks. FEMA did not concur with this recommendation. GAO believes that gaps in early response abilities warrant federal attention and has clarified its recommendation.

Recommendation: To provide assistance to major cities in planning for early response to RDD and IND attacks, the Secretary of Homeland Security should direct the Administrator for the Federal Emergency Management Agency to promote greater awareness of existing federal guidance and develop additional guidance where appropriate to clarify the capabilities needed by cities for these attacks, including the planning assumptions for an RDD attack and the type and timing of federal assistance for early response.

Agency Affected: Department of Homeland Security

Status: Open

Comments: When we confirm what actions the agency has taken in response to this recommendation, we will provide updated information.

► [Read full report at source URL](#)



Cunning Iran wins again

By Ben Frankel

Source: <http://www.homelandsecuritynewswire.com/cunning-iran-wins-again-ben-frankel>

(May 2010 article)

Last weekend the leaders of Brazil, Turkey, and Iran reached an agreement which is similar to the one the IAEA offered Iran last October; Iran would ship to another country 1,200 kg of low-enriched uranium, and in return would receive nuclear fuel for its research reactor; without a complete and verifiable stop to Iran's aggressive enrichment activities, especially a stop to its effort to enrich uranium to 20 percent, the IAEA proposal would have achieved, and last weekend's deal will achieve, only one thing: merely delay the inevitable — Iran's acquisition of nuclear weapons — and not even delay it by much (months, not years); to suggest otherwise is to whistle past the graveyard

The Iranian are either smart, lucky, or both. They have been following their plan to develop nuclear weapons without wavering and without detours — and each time it appeared as if the international community would take action which would make Iran's pursuit of nuclear weapons prohibitively costly, events conspired to deflect such action.

—In 2003 the United States invaded Iraq claiming Saddam had “reconstituted” his nuclear weapons program. There were no nuclear weapons in Iraq and no program to reconstitute them. The preoccupation with Iraq, a country that did not have nuclear weapons, diverted the Bush administration's attention and resources from two countries that were assiduously working on developing them — North Korea and Iran. While the United States was busy trying to stabilize the situation in Iraq, North Korea has tested two nuclear weapons and Iran perfected its uranium-enrichment technology.

—Questions raised about the credibility and quality of U.S. intelligence as a result of how this intelligence was used in the run-up to the Iraqi war made it more difficult for the United States to persuade other nations when it came to intelligence about the state of the Iranian nuclear weapons — especially since the manner in which the Bush administration treated other nation's misgiving about whether or not the Iraqi venture was justified did not

help engender much good will toward, or willingness to cooperate with, future U.S. efforts such as isolating Iran

—When, in the fall of 2007, the UN was beginning to move in a more determined fashion toward tightening sanctions on Iran, the Bush administration published a small portion of the December 2007 National Intelligence Estimates (NIE) which argued, startlingly and incredibly, that Iran had “halted” its nuclear weapons program in 2003. In February 2008 we wrote that the NIE document was “strange, misleading, and poorly timed” (Ben Frankel, “U.S. still fighting for sanctions on Iran, but with a weaker hand,” 19 February 2008 *HSNW*). We were joined in this assessment by the very bosses of the team which produced the NIE — then-Director of National Intelligence Mike McConnell and then-CIA Director Michael Hayden. McConnell admitted, in a March 2008 testimony in Congress, that the “wording” of the December NIE was poor, and that inferences drawn from it that Iran had stopped its relentless march toward the bomb were wrong. As for Hayden: “CIA Director Michael V. Hayden said Sunday that he believes Iran is still pursuing a nuclear bomb, even though the U.S. intelligence community, including his own agency, reached a consensus judgment last year that the Islamic Republic had halted its nuclear weapons work in 2003” (*Los Angeles Times*, 31 March 2008). We argued that:

The strange, misleading, and poorly-timed NIE dealt a near-mortal blow to the administration's own efforts to continue and intensify the economic sanctions on Iran. The administration thus contributed to the creation of a situation in which it is more likely than not that the world will either have to accept a nuclear-armed Iran, or go to war to stop it. With its own inadvertent weakening of the case for economic sanctions (Iran, after all, had “halted” the work of a small element of its nuclear weapon program), this middle option of imposing penalties short of war on Iran is becoming less

—With the Iranian menace growing, Secretary of State Condoleezza Rice embarked on an effort to form a Arab Sunni-Israeli-U.S. coalition to contain Iran and resurgent Shi'ism in the Middle



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East. The Obama administration continued its predecessor's policies, with Obama, in his 2009 speech in Cairo, calling for opening a new chapter in the relationship between the United States and the Arab world. This plan was dealt blow with the election of Benjamin Netanyahu in Israel, and the formation of a hawkish coalition government there. Netanyahu's less conciliatory policies toward the Palestinians may or may not be justified from the perspective of Israel's security, but there is little doubt that lack of progress on the Israeli-Palestinian front hampers any effort to create a grand Sunni-Israeli-U.S. coalition against Iran. The stalemate in the negotiations between Israel and Palestinians not only makes it difficult for moderate Sunni Arab regimes to cooperate with Israel against Iran, but it also allows Iran to present itself as the champion of Palestinian rights — rights, the Iranians charge, which the pro-U.S. Arab regimes no longer fight for.

—The latest escape for Iran was provided this past weekend by Brazil and Turkey. Leaders of the two countries met with Iranian leaders in Tehran and, with much fanfare, announced a nuclear deal which, according to the president of Turkey, now makes further UN sanctions on Iran unnecessary and unjustified.

A close examination of the Iranian-Turkish-Brazilian deal show that it, too, is largely an empty gesture, a sleight of hand which will likely delay, for a considerable period of time, any meaningful international action against Iran while allowing the Iranians more scope to continue their relentless, determined march toward the bomb.

The Iran-Brazil-Turkey nuclear deal

The deal requires that Iran will send 1,200 kg of low-enriched uranium (LEU) — uranium Iran had enriched in its centrifuge farms — for storage in Turkey, where international monitors would ensure the safekeeping of the material. After a year, Iran would get 120 kilograms of fuel for the Tehran Research Reactor.

Nathan Hodge asks the right question; Does this deal mean that the crisis is solved, or is Tehran just playing for time while it gets closer to the bomb?

The timing of the deal, which Iran is trumpeting as a diplomatic victory, is not accidental, as the United States and its allies were expected to push for a tougher round of international sanctions next month, after Lebanon gives up

its rotating presidency at the UN Security Council (the Lebanese government is held hostage by Hezbollah — the Lebanese Shi'ia organization is better armed than the Lebanese military — and Hezbollah, serving as Iran's agent, let the government know that it would not be wise to allow a discussion over Iranian sanctions while Lebanon was presiding over the Security council).

Hodge notes that, at first blush, the deal mirrors an arrangement the International Atomic Energy Agency (IAEA) advanced in October (an initiative backed by Western governments) to send out Iran's uranium for enrichment.

The proposed shipment of 1,200 kg is enough, after being further enriched to 90- percent or higher, for a single, crude Hiroshima-style bomb. The problem is that since Iran has continued to enrich uranium, and has done so at an accelerated pace, its low-enriched uranium stockpile is now larger than it was when the IAEA deal was originally proposed last October.

Iran currently enriches uranium at a gas centrifuge facility in Natanz. This is where uranium hexafluoride gas — the feedstock for enrichment — is spun through centrifuge cascades to separate out uranium-238 (the most common isotope of uranium) and uranium-235 (the fissile material for a bomb). Iran is building a second centrifuge facility at a site near Qom, although no centrifuges have actually been installed, the best Western intelligence services can tell.

How much low-enriched uranium Iran would still have after the fuel deal? Joseph Cirincione, president of the Ploughshares Fund and an expert on nuclear nonproliferation, told Hodge in an e-mail that Iran's reported deal "is more than expected," although he adds a few caveats. If Iran carries through — and that is a big if — the deal could buy some breathing space in the continuing crisis. But the May deal [the Brazil-Turkey-Iran deal] is worth less than the October deal [the IAEA proposal] for two reasons. First, Iran has continued to produce low-enriched uranium, so the 1,200 kg it will ship to Turkey is a smaller percentage of its total supply. The latest IAEA report in February gave them an estimated 2,065 kg at the end of January. They are producing about 125 kg per month, so that could be a total of 2,565 kg by the end of May. Thus the 1,200 kg shipped would



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represent only half their supply. Second, Cirincione told Hodge, the proposal brokered with Turkey and Brazil may do little to allay concerns about Iran's nuclear intentions. "Suspicions and mistrust will remain high," he told Hodge. "Western states will continue to believe that Tehran is playing Lucy and the football with the LEU — offering it up for exchange, only to yank it away at the last minute."

Ivan Oelrich, vice president of the Strategic Security Program at the Federation of American Scientists (FAS) and FAS researcher Ivanka Barzashka are more sanguine. They told Hodge that the technical difference between the October deal and the May deal is small — and that Iran is offering up a key opportunity for engagement. "A ton of LEU [low enriched uranium] is a crude nuclear weapons' worth of material," said Barzashka. "It's safe to say that you're reducing the number of nuclear weapons Iran can make in the future."

Oelrich and Barzashka point to a second problem, however: Iran has used stalled negotiations about the research reactor to start enriching a small quantity of uranium to 20 percent. In theory, if Iran develops a significant stockpile of 20 percent uranium — something it has not done yet — it would cut in half the time to reach 90 percent. "That's an important thing to avoid," Oelrich said.

According to calculations by Barzashka and Oelrich, if Iran had shipped out a ton of material back in October, it would have been left with around 800 kg as feedstock, not enough to acquire a significant quantity of highly enriched uranium. If they continue to

enrich uranium, however, they might have enough by October 2010 to ship out a ton and still have enough material left over to begin enriching a bomb's worth of the stuff.

Thus far, however, Oelrich and Barzashka argue that the effort to enrich to 20 percent is modest, and has more political than technical meaning. "We think it's largely symbolic at this point," Oelrich said.

The FAS is encouraging the State Department to take a serious look at the proposal. "This whole deal was supposed to be a step forward for engaging Iran, not to stop its enrichment program," Oelrich told Hodge.

Words such as "engagement" and "dialogue" are nice words — indeed, they stand for nice things. To use them to describe the Brazil-Turkey-Iran deal is to whistle past the grave yard. Our view is less forgiving. From the perspective of preventing Iran from developing nuclear weapons — and this is the only perspective that counts right now — the only thing that matters is a complete and verifiable stop of Iran's aggressive uranium enrichment activities, and especially a complete and verifiable halt to Iran's efforts to enrich uranium to 20 percent. Without a stop to enrichment, even if Iran were to accept the IAEA's October proposal, it would not have amounted to more than a sleight-of-hand aiming to buy Iran time, not to indicate a renunciation of nuclear weapons-related activities. For Iran to accept a similar proposal today is largely a meaningless gesture aiming to dupe those who are eager to be duped. Yes, this past weekend's deal is not exactly nothing, but it is not exactly something, either.

Ben Frankel is editor of Homeland Security NewsWire

Forcing Another Fukushima: 90% of America's Nuclear Reactor Regulators Now to be Furloughed

Source: <http://www.nationofchange.org/forcing-another-fukushima-90-america-s-nuclear-reactor-regulators-now-be-furloughed-1381673321>

As if the world needed another catastrophe of Fukushima proportions, the Nuclear Regulatory Commission just announced that it expects another 3900 employees to be furloughed this week due to budget shortages. This comprises more than 90% of the agency's workforce who are charged with making sure more than 100 nuclear reactors spread across 63 sites in the US remain safe.

Only approximately 300 personnel will remain on staff, including 150 resident inspectors and a 'skeletal' management crew along with some emergency staffers. While we might be able to go without many of the 'services' of the government: the FDA, CDC and EPA, it seems preposterous for our politicians to play with nuclear fire in view of the recent upgrade of the



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Fukushima disaster to catastrophic proportions. After all, America's nuclear power plants are aging. The average plant is over 30 years old with the oldest two nuclear sites being in Oyster Creek, New Jersey, and Nine Mile Point



1 in New York, respectively. Some plants were recently closed due to safety concerns and the permanent decline of their systems. Many plants are showing injured steam generators and others have structural damage.

Also, the populations living near nuclear plant sites have sky-rocketed in the past decades. In some places populations have increased nearly four times since the 1980s. If an emergency occurred residents would be expected to evacuate a 'nuclear fall-out area' on old two-lane highways meant to act as sufficient infrastructure more than 4 decades ago.

Furthermore, most nuclear sites have been allowed to run at maximum capacity for many years now, increasing radiation risks, even if no major incident, such as an earthquake,

tsunami, tornado, or other unforeseeable weather event were to happen. Even a small flood, could cause a chain reaction which would lead to the same events we have observed in Japan, particularly at sites where reactors are aging and fragile to begin with.

The National Resources Defense Council has mapped out areas where nuclear fallout are most probable in the event of a catastrophe, but they fail to detail just how likely that occurrence could be.

Moreover, imagine the government response to an actual crisis – and remember the people who went without food, shelter or medical care

during Hurricane Katrina for weeks. Can we trust our leaders – especially during a government shutdown to usher in needed emergency services should they be required?

The federal government has also failed to find a sufficiently safe place for spent nuclear fuel. Who will be making sure this poison isn't dumped in our backyards during the government furlough? Halting some government programs during the shut-down has seemed acceptable, possibly even with a smug nod of 'good-riddance' from some who see the government as a bloated entity to begin with, but sending home workers who make sure we don't have another Fukushima right here on American soil is sheer wickedness.

No proof Yasser Arafat was killed by radioactive poisoning

Source: <http://www.homelandsecuritynewswire.com/bull20131016-no-proof-yasser-arafat-was-killed-by-radioactive-poisoning-scientists>

Yasser Arafat died in November 2004 in a French hospital after rapid deterioration in his condition. He was 75 years old, but in good condition, and Palestinian and French doctors could not identify the reason for his decline. Even before he died, Palestinian leaders spread the rumor that he was poisoned on the orders of then-Prime Minister Arik Sharon of Israel. Last year, the Palestinian Authority agreed to a request by Arafat's widow, Suha, and French judicial investigators to exhume his body for further tests. Tissues were harvested and were examined, along with some of

Arafat's personal effects, by Swiss, French, and Russian scientific teams. The Swiss team published its report this weekend in the leading medical journal *The Lancet*, saying that traces of the radioactive polonium-210 were found on some of Arafat's personal effects, but not in his body tissues. The Swiss team uses suggestive language – the evidence they found "support the possibility of Arafat's poisoning with polonium-210" and that his symptoms in the weeks before he died "might suggest radioactive poisoning" – but admit that the absence of evidence of



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polonium-210 in body tissues makes it impossible to say with certainty that Arafat was poisoned. The Russian scientists are more definitive. “He could not have died of polonium poisoning — the Russian experts found no traces of this substance,” Vladimir Uiba, the head of Russia’s Federal Medical-Biological Agency, said earlier today (Tuesday).

A team of Swiss scientists from the Centre hospitalier universitaire vaudois (CHUV) at the Université de Lausanne, who have examined the exhumed remains of Yasser Arafat, confirmed that they have found traces of the radioactive substance polonium-210 on some of his personal effects. Some Palestinians accused Israel of poisoning Arafat in 2004.

The *Guardian* reports that the discovery of polonium-210 on Arafat’s effects was first made public last year, fuelling calls for a more thorough investigation of his death in a French hospital in November 2004. Last November his body was exhumed from its resting place in the West Bank city of Ramallah, and tissues were harvested for examination at CHUV.

The Swiss toxicologists who examined the body published their report this past weekend in the *Lancet*.

They say they had examined thirty-eight items belonging to Arafat, including underwear and a toothbrush, and compared them with a control group of thirty-seven items of Arafat’s which had been in storage for some time before his death.

They found traces of the substance which “support the possibility of Arafat’s poisoning with polonium-210,” the scientists reported, adding: “Although the absence of myelosuppression [bone marrow deficiency] and hair loss does not favor acute radiation syndrome, symptoms of nausea, vomiting, fatigue, diarrhoea, and anorexia, followed by hepatic and renal failures, might suggest radioactive poisoning.”

Arafat was 75 when he fell ill in late summer 2004 while holed up in the half-destroyed Mukata, his presidential compound, in Ramallah. The Mukata was under Israeli military siege following Israel’s 2002 military attack on Palestinian leadership targets in the

wake of a series of Palestinian suicide bombings inside Israel.

Palestinian doctors could not identify the source of Arafat’s deteriorating medical condition, and he was flown to France for further treatment. French physicians, mystified by his illness, could not arrest his decline, and he died a couple of weeks after being admitted to the French hospital.

Even before he died, Palestinians leaders spread the rumor that he was poisoned on the orders of then-Prime Minister Arik Sharon of Israel. Some in Arafat’s entourage, aware of their leader’s fondness for sweets, claimed Israel’s Mossad killed him by lacing the cookies — he favored pecan sandies — which he consumed in large quantities with poison.

No postmortem was conducted on his body.

Last year, after al-Jazeera aired a documentary in which Swiss scientists said that some of Arafat’s personal effects were found to have traces of polonium-210 on them, the Palestinian Authority agreed to a request by Arafat’s widow, Suha, and French judicial investigators to exhume his body for further tests.

In the *Lancet* report, the Swiss scientists said that “An autopsy would have been useful in this case because although potential polonium poisoning might not have been identified during that procedure, body samples could have been kept and tested afterwards.”

The Swiss scientists’ suggestion that Arafat may have died of radioactive poisoning has been rejected by other scientists. Arafat’s tissues and personal effects were also examined by Russian and French scientists. We are still waiting for the conclusions of the French team, but The *Neue Zürcher Zeitung* reports that a member of the Russian team, responding to the *Lancet* report, said today (Tuesday) that the Swiss scientists’ suggestive language notwithstanding — the Swiss team said the evidence they found “support the possibility of Arafat’s poisoning with polonium-210” and that his symptoms in the weeks before he died might suggest radioactive poisoning” — that



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forensic tests the team conducted found no indications of polonium poisoning in the body of the late Palestinian leader Yasser Arafat.

“He could not have died of polonium poisoning — the Russian experts found no traces of this substance,” Vladimir Uiba, the head of Russia’s Federal Medical-Biological Agency, told the Interfax news agency on Tuesday.

Polonium-210 was used by agents of the FSB, Russia’s security service, to kill Alexander

Litvinenko, a former Russian KGB agent. Litvinenko had left Russia for London, where he became a leading critic of Vladimir Putin, a former fellow KGB officer. The FSB agent met Litvinenko at a London restaurant, and slipped a small amount of polonium-210 into Litvinenko’s food while Litvinenko was in the rest room.

— *Read more in Pascal Froidevaux et al., “Improving forensic investigation for polonium poisoning,” The Lancet 382, no. 9900 (12 October 2013): 1308*

Compound derived from vegetables offers shield from lethal radiation doses

Source: <http://explore.georgetown.edu/documents/72391/?PageTemplateID=141>

Georgetown University Medical Center researchers say a compound derived from cruciferous vegetable such as cabbage, cauliflower, and broccoli protected rats and mice from lethal doses of radiation.

Their study, published today in the *Proceedings of the National Academy of Sciences* (PNAS), suggests the compound, already shown to be safe for humans, may protect normal tissues during radiation therapy for cancer treatment and prevent or mitigate sickness caused by radiation exposure.

The compound, known as DIM (3,3'-diindolylmethane), previously has been found to have cancer preventive properties.

“DIM has been studied as a cancer prevention agent for years, but this is the first indication that DIM can also act as a radiation protector,” says the study’s corresponding author, Eliot Rosen, MD, Ph.D., of Georgetown Lombardi Comprehensive Cancer Center.

A Lombardi Center release reports that For the study, the researchers irradiated rats with lethal doses of gamma ray radiation. The animals were then treated with a daily injection of DIM for two weeks, starting ten minutes after the radiation exposure.

The result was stunning, says Rosen, a professor of oncology, biochemistry and cell & molecular biology, and radiation medicine. “All of the untreated rats died, but well over half of the DIM-treated animals remained alive thirty days after the radiation exposure.”

Rosen adds that DIM also provided protection whether the first injection was administered twenty-four hours before or up to twenty-four hours after radiation exposure.

“We also showed that DIM protects the survival of lethally irradiated mice,” Rosen says. In addition, irradiated mice treated with DIM had less reduction in red blood cells, white blood cells and platelets — side effects often seen in patients undergoing radiation treatment for cancer.

Rosen says this study points to two potential uses of the compound. “DIM could protect normal tissues in patients receiving radiation therapy for cancer, but could also protect individuals from the lethal consequences of a nuclear disaster.”

Rosen and study co-authors Sajjun Fan, Ph.D., and Milton Brown, MD, Ph.D., are co-inventors on a patent application that has been filed by Georgetown University related to the usage of DIM and DIM-related compounds as radioprotectors.



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— Read more in Saijun Fan et al., “DIM (3,3'-diindolylmethane) confers protection against ionizing radiation by a unique mechanism,” Proceedings of the National Academy of Sciences (14 October 2013)

Debate heats up over N.Y.'s Indian Point nuke license renewal

Source: <http://www.homelandsecuritynewswire.com/dr20131011-debate-heats-up-over-n-y-s-indian-point-nuke-license-renewal>

Indian Point nuclear power plant, located twenty-four miles north of New York City, provides 25 percent of the power used in New York City and Westchester County. The plant's two reactors were built four decades ago, and

government, what I've seen over time is that it's very difficult to operate plants.”

Other members on the panel, former Japanese prime minister Naoto Kan and political activist Ralph Nader, discussed the lessons of Japan's



the plant operator is seeking a 20-year license renewal for them, or they will have to be shut down. Opponents of the license renewal point to the risk inherent in operating aging reactors – and to a recently discovered risk: Indian Point is located near two active seismic areas — the Ramapo Fault Plain and the Peekskill-Stamford line.

Entergy Corporation (ETR), operator of the Indian Point nuclear power plant, located twenty-four miles north of New York City, is facing opposition from local officials and residents who want the plant shut down..

Bloomberg reports that at a panel discussion moderated by the president of Riverkeeper Inc., a group which opposes the continuing operation of Indian Point, Greg Jaczko the former chairman of the U.S. Nuclear Regulatory Commission(NRC), agreed, saying that “the best solution is to sit down with all the interested stakeholders and think about a way to shut down the plant on a reasonable time frame. When you have this much local opposition and opposition from state

Fukushima meltdown. Kan stated that all nuclear power reactors should be closed and the world should shift to renewable sources to meet its energy needs.

Entergy is seeking a 20-year license renewal from the Nuclear Regulatory Commission, which would allow it to operate Indian Point a two-unit nuclear plant that generates 25 percent of the power used in New York City and Westchester County, for twenty more years. State officials, environmental groups, and New York Governor Andrew Cuomo oppose the license renewal. Cuomo once called Indian Point “a catastrophe waiting to happen,” and in his campaign literature in 2010 said that he would push for its closure. “I’ve had concerns about Indian Point for a long time ... This plant in this proximity to New York City was never a good risk.”

The plant's aging reactors are a concern for opponents, who question its safety. Indian Point's two functioning reactors were built during the administrations of Richard Nixon and Gerald Ford,



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respectively. The recent discovery that Indian Point is located near two active seismic fault lines — the Ramapo Fault Plain and the Peekskill-Stamford line — has added to these safety worries.

Entergy released a statement on 8 October 2013 defending Indian Point's safety record. "Indian Point is a safe plant that gets excellent safety ratings from the NRC, including while under the former chairman. The plant is regularly examined to identify enhancements to make it even safer, including using lessons learned from Fukushima, and many have either been completed or are under way," the company said.

"Nearly \$1 billion has been invested in Indian Point over the past decade, making it a world-class facility," Jerry Kremer, chairman of the pro-nuclear power New York Affordable Reliable Electricity Alliance, said in a statement released on 8 October 2013. "Indian Point makes the region a cleaner, safer place to live."

The Alliance includes an Entergy executive, union representatives, and members of local business councils.

Jaczko, in a December 2011 interview with *Bloomberg News*, agreed that a Fukushima-like disaster at Indian Point would unfold slowly, allowing for the safe evacuation of would-be affected areas (Governor Cuomo strongly disagrees, saying it is not feasible to evacuate about twenty million residents of the metropolitan area in the event of an accident). Jaczko, however, still maintains his position on the need to shut down Indian Point, evident in another interview with *Bloomberg News* after his speech at the panel. "The best option is to work out and negotiate a settlement and come to some sort of agreement to shut it down rather than this very expensive and very contentious and acrimonious process," Jaczko said. "That is never a good way to resolve these issues."

Is the U.S. Prepared for an EMP Event?

By Ryan Mauro

Source: <http://www.clarionproject.org/analysis/us-prepared-emp-event#>

An interview with expert Michael Maloof a former senior policy analyst for the U.S. Office of the Secretary of Defense.



Michael Maloof Michael Maloof is the author of *A Nation Forsaken: EMP-The Escalating Threat of an American Catastrophe*.

Maloo is a former senior policy analyst for the U.S. Office of the Secretary of Defense and has almost 30 years of federal service, 23 of which were with the Defense Department. He was the Director of Technology Security Operations, where he

led a 10-man team in tracking and prevention the proliferation of dangerous weapons.

After the 9/11 attacks, Maloof was detailed back to the Office of the Under Secretary of Defense for Policy to prepare analysis of worldwide terrorist networks.

The following is Clarion Project National Security Analyst Ryan Mauro's interview with Michael Maloof:

1

Ryan Mauro: Are there any serious objections from the scientific community about the danger from a potential EMP event?

Michael Maloof: Scientists generally are in agreement that a natural or man-made electromagnetic pulse, or EMP, can be devastating to our unprotected electrical grid, electronics and automated control systems. Depending on its intensity, an EMP can have a potentially catastrophic, cascading impact on all of the electricity-dependent critical

infrastructures on which we rely for survival.

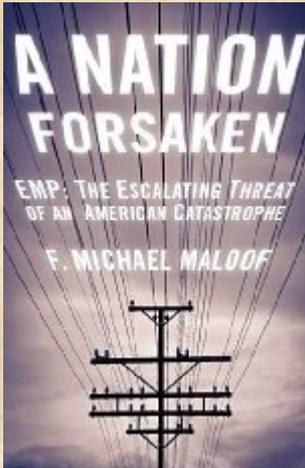
The importance of this problem became apparent after some members of Congress had been told by the Russian Duma, or parliament, members that their country could "bring America to its knees" with one EMP nuclear device exploded at a high altitude, destroying the U.S. grid.

As a consequence, Congress in 2000 mandated the creation of an EMP Commission of



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prominent scientists to look at the effects of an EMP on our national grid and all of the critical infrastructures which depend on it.



In a 2004 preliminary report and again in a final, more in-depth report, the EMP Commission showed in considerable detail the catastrophic impact an EMP would have on such critical infrastructures as telecommunications, banking and finance, petroleum and natural gas delivery, transportation, food and water delivery, emergency services and space systems.

In issuing the 2008 report, which proposed a series of recommendations, the EMP Commission chairman, Dr. William Graham, said that an EMP event, whether natural or man-made, would cause “unprecedented cascading failures of major infrastructures.” In that event, he said, “a regional or national recovery would be long and difficult, and would seriously degrade the safety and overall viability of our Nation.”

Given the prospect of an EMP event over a wide geographical area of the country, it could push the nation back virtually to the 19th century, with our urban environment being the most severely affected. Some EMP experts suggest the urban centers of the United States could become extinct given the high potential for disease and other secondary effects from an EMP, leading to the prospect of death and starvation to some 90 percent of the U.S. population.

2

Mauro: *Wouldn't above-ground nuclear tests during the Cold War have created a disastrous EMP effect if this science were accurate?*

Maloo: The tests were conducted primarily in the Pacific Ocean area and they were not high-altitude bursts. Nevertheless, it was during those tests that EMP was first detected after a test explosion affected communications some 800 miles away in Hawaii. EMP experts say all electronics and instruments were affected in the test area. In seeing this result, further tests were conducted by the British and then Soviets and determined that the potential of an EMP on electronics, communications and the grid were dramatic. Because our electronics today have become more sophisticated, the likelihood of an EMP event on them will be even greater, if left unprotected.

3

Mauro: *What countries are developing EMP capabilities and would the movement of nuclear warheads onto ships and then to the U.S. coast be detected?*

Maloo: All countries with nuclear weapons are very aware of the effects of an EMP and know their nuclear weapons create an EMP effect. Some countries, such as North Korea and China, have created what is referred to as a “super-EMP,” designed to emit more gamma rays than to create destruction from the blast.

Not only China and North Korea know about EMPs, but also Russia, Iran, Pakistan and India similarly know about EMP and have incorporated the concept in their military doctrine. The most recent nuclear tests conducted by North Korea, for example, was low in kilotons but thought to be high in gamma rays –in effect, developing a “super-EMP” that could be exploded at a high-altitude over the United States, greatly affecting critical U.S. infrastructures. In knowing what the impact of an EMP would be on electrical grid systems and all electronics, these countries are undertaking efforts to harden their own electronics to mitigate EMP effects on their technology-based systems.

Unless there is good real-time intelligence, it would be difficult to detect a nuclear device that could be moved by ship toward the U.S. coasts. Indeed, a country with a nuclear weapon really doesn't need an intercontinental ballistic missile capability. It only needs to use a false-flag freighter to approach the U.S. coast and assimilate into the heavy shipping traffic that exists along our coasts. Then, a simple Scud missile which would be in the bowels of the vessel could be raised to the deck and launched off our coasts without warning or detection. For example, such a vessel could position itself along the U.S. East Coast and fire a high-altitude nuclear device over the most populated area of the United States between Boston and Washington.



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There also is another growing problem just within our hemisphere, and that is the relationship between Cuba and North Korea. It was a major surprise to the U.S. intelligence community when it recently had a North Korean vessel detained going through the Panama Canal. Intelligence had suggested the vessel was carrying drugs. However, upon inspection, the vessel was found to be carrying components and possibly a complete Cuban SA-2, or ground-to-air anti-aircraft missile. The SA-2s are nuclear-capable. The Cubans are assessed to have some 100 SA-2, going back to the days of the 1962 Cuban Missile Crisis.

Although designed to be used against aircraft, an SA-2 armed with a North Korean “super-EMP” device and fired without any warning along the U.S. East coast to a high altitude of some 50 kilometers would knock out at least the eastern grid, which services some 70 percent of the U.S. population. The missile could be fired from a ship whose identity would not immediately be ascertained, if at all. At such a close range, it also is doubtful whether an anti-ballistic missile system would be able to react in time to intercept it.

Given these possible scenarios, it is all the more reason why it is imperative that the United States federal government, in cooperation with state governments and the local utilities, make it a priority to harden all electronics and the national grids – there are three – Eastern, Western and Texas grids – to mitigate this potential, catastrophic outcome on our technologically based critical infrastructures.

4

Mauro: What would it cost the U.S. government to protect the power grid? If it did so, would an EMP attack still be catastrophic?

Malooof: The cost varies, but it can be up to \$20 billion over a few years' period. While that might seem to be a massive amount, it is very little compared to the alternative. The National Aeronautics and Space Administration, for example, has projected the cost from a direct hit from a solar flare would cost some \$2 trillion in the first year, take

four to 10 years to recover and affect the lives of more than 160 million people, meaning that they would either die or starve. The EMP effect from a high-altitude nuclear explosion, however, could be worse, since it is more intense than the impact of a solar flare.

A direct hit from a solar flare is perhaps our most immediate threat of an EMP. The sun is fast approaching a “solar storm maximum” which occurs every 11 years. We're now beginning the most intense period of that 11-year solar cycle. The greatest intensity of an increasing number of solar flares spewing from the sun's surface is expected between now and all of 2014.

While some \$20 billion would go to harden the major critical infrastructures, it will mitigate greatly the impact of an EMP event, but it won't be totally foolproof. The nation would be in a far better position to sustain an EMP, whether from natural or man-made events, if the national effort to harden all electronics is undertaken now.

5

Mauro: What can average citizens do to prepare for a potential EMP?

Malooof: The fact that the federal government has been aware of the effects of an EMP event on our critical infrastructures but has done nothing has placed the burden of preparation on individual citizens at the state and local level.

I have outlined in my recent book on EMP what individuals need and can do to prepare for such an event. It is titled *A Nation Forsaken: EMP-The Escalating Threat of an*

American Catastrophe.

Since the time of the EMP Commission's revelations of the impact of an EMP event on those technologically-based critical infrastructures, the federal government still hasn't treated it as a national security issue. For example, the U.S. Department of Homeland Security still does not regard an EMP event as one of its 15 National Planning Scenarios which offer procedures to be implemented in the event of a catastrophic emergency, such as floods or terrorism.

Congress once again has introduced the SHIELD Act to give the federal government more authority to require hardening of the national grid and electronics that affect those critical infrastructures but, to date, it hasn't been able to pass the Senate even though the House in previous Congresses did pass it.

Consequently, individual citizens need to take the initiative from the ground up rather than waiting for decisions to be made at the national level.



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Individuals can initiate action with their state legislatures and governors. Indeed, citizens of Maine took such action last June to harden their grid. The hope is that other state legislatures will take similar action in the near future.

Also, emergency services at the local levels need to determine whether they can respond if an EMP is to occur. Any exercise must assume that all communications have been knocked out and that emergency responders will have difficulty in reacting since emergency vehicles could be affected since they have electronic ignitions. Testimony in Maine from emergency responders revealed that emergency vehicles could be taken out of the game because of an EMP.

Consideration therefore should be given to creating pre-determined locations where communities know beforehand where there is food, water, medications and shelter to which individuals and families need to report. That means that communities need to begin stocking up on supplies and have locations pre-selected so that there is some degree of orderliness in the face of such an emergency.

Individuals need to prepare so-called “go-bags” that have essentials for each individual of a family, including firearms.

Under such chaotic conditions, there is no doubt that gangs may begin roaming neighborhoods and more rural locations and individuals need to be able to protect their families and possessions.

People who have experienced the impact of temporarily having no electricity and no means of transportation in times of floods, hurricanes and past natural disasters know what such chaotic conditions are like.

In the case of an EMP, people need to place themselves into a 19th century existence and figure out what they will need in a household, such as a supply of stored food, water and medications on which they may need to survive for weeks, months and possibly years.

Ryan Mauro is the ClarionProject.org’ National Security Analyst, a fellow with the Clarion Project and is frequently interviewed on top-tier TV stations as an expert on counterterrorism and Islamic extremism.

Improving nuclear waste repositories

Source: <http://www.homelandsecuritynewswire.com/dr20130920-improving-nuclear-waste-repositories>

Here is the question faced by a team of Sandia National Laboratories researchers: **How fast will iodine-129 released from spent nuclear fuel move through a deep, clay-based geological repository?**

radionuclide retention. Even when a repository is not sited in clay, engineered barriers often include a compacted buffer of bentonite, a common type of clay, to improve waste isolation.



Understanding this process is crucial. Countries worldwide consider underground clay formations for nuclear waste disposal because clay offers low permeability and high

A Sandia Lab release reports that iodine-129, a radioactive isotope with a half-life of 15.7 million years, is an important fission product in spent nuclear fuel and a major contributor to the predicted total radiation dose from a deep geological repository. So even a small improvement in the ability of clay to retain iodine-129 can make a difference in total dose predictions. Some evidence indicates weak interaction between clay and iodide — a negatively charged predominant chemical species of iodine in

geologic repositories, said researcher Yifeng Wang, who leads the study. Computer models have not been able to adequately explain clay’s chemical

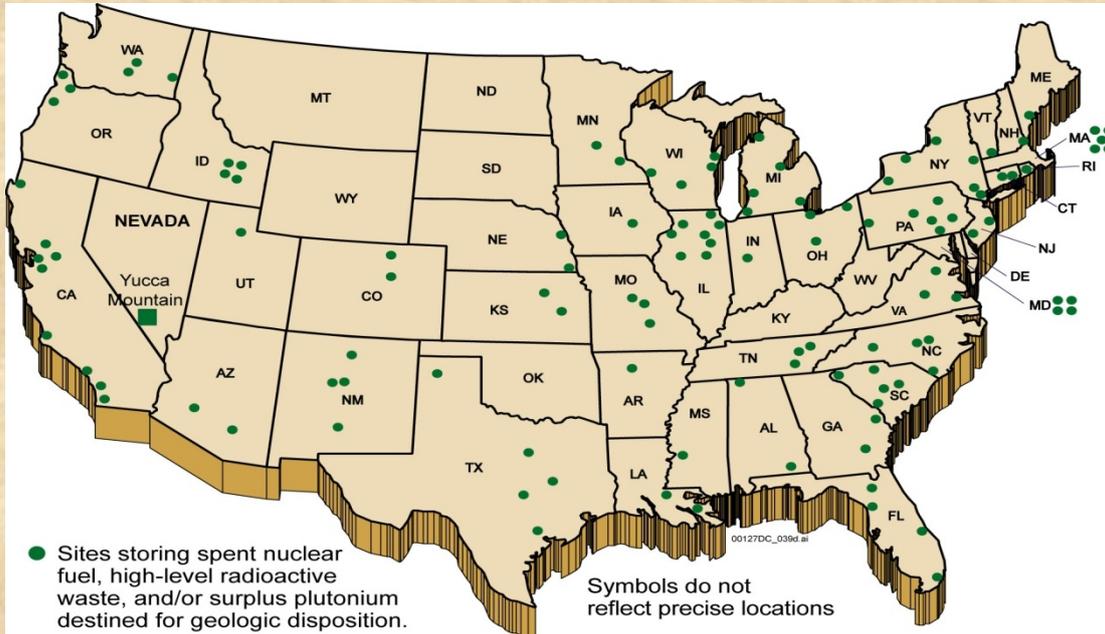


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behavior with iodide, and the mechanism is difficult to study because the faint interaction is easily masked by measurement uncertainties. “It seems there’s some kind of previously

Sandia team focuses on clay structure

The team — Wang and former co-principal investigator Andy Miller, who recently left Sandia; technician Hernesto Tellez; and year-



unrecognized mechanism that accounts for that kind of interaction,” said Wang, co-principal investigator for the Laboratory Directed Research and Development project to study radionuclide-clay interaction, now in its third and final year.

round interns Jessica Krulichak and Melissa Mills — developed experiments with different clays, focusing on their structural characteristics. Past studies of iodide retention in clay concentrated on bentonite. Wang’s team instead studied several different clays,



His team concluded the interaction, often disregarded as experimental noise, is real and that there might be engineering ways to improve clay’s ability to retain iodide.

five with the same type of layered structure as bentonite. Although industries are accustomed to using the plentiful and oft-studied bentonite, the team’s experiments show other clays have higher



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radionuclide retention capability and might isolate spent fuel waste better. Kaolinite had the best iodide retention of the five clays with layering properties. Wang said the team believes its work “can help us select a better clay material or combination of clay materials.” Team members believe they discovered a mechanism for iodide-clay interactions that



allows more accurate prediction of iodine-129 movement in a geologic repository. The finding was presented in May to the International High Level Radioactive Waste Management Conference in Albuquerque and was published in the conference proceeding.

The experimental data indicate iodide directly interacts with the tiny spaces between the layers of clay, called clay interlayer sites. That raises the question of how negatively charged iodide gets into those negatively charged interlayer sites, since like charges repel each other, similar to magnets of the same polarity. “So that contradicts the conventional concept,” Wang said.

The team got clues about what was going on by studying the problem at the nanoscale, 100,000 times smaller than the diameter of a

human hair. At that scale, Wang said, the property of water changes in a way that enhances the pairing of ions.

Conclusion: ion pairing explains iodide reaction with clay

Ion pairing explains how iodide reacts with clay and moves into the pores despite the fact both iodide and clays are negatively charged.

The release notes that the team postulates that iodide pairs with positively charged sodium to create a neutral ion pair. That occurs because of the enhanced ion association capability of water trapped in nanometer-scale clay interlayers, resulting in a pairing that helps iodide move into the interlayer by minimizing electric repulsion, Wang said.

Clay is densely compacted when it’s used as a barrier and can swell as it contacts with water.

“That’s why people use clay materials and compact it,” Wang said. “It’s a good engineered barrier to isolate radionuclides.”

Retention properties increase with compaction, which makes the pores smaller, he said. “That’s another way to increase the effectiveness of clay materials,” he said.

Sandia’s study, however, also suggests measurements in labs could be more accurate. Usually researchers break up samples before they measure the solvency of a specific material. “We actually show the nano-pore confinement makes a big difference,” Wang said. “That means what you measure in the lab most of the time is not representative of an actual compacted material. The compacted material may in fact give you better retention.”

Israel’s Nuclear Ambiguity, Arms Control Policy, and Iran: Is the Time Ripe for Basic Changes?

By Emily B. Landau , Ephraim Asculai and Shimon Stein

Source: <http://www.inss.org.il/index.aspx?id=4538&articleid=5855>

In recent discussions surrounding chemical weapons use in Syria and the subsequent agreement whereby Syria would join the Chemical Weapons Convention (CWC), and pursuant to international efforts to stop Iran’s ongoing efforts to achieve military nuclear capability, Israel’s name is not infrequently

raised with demands for so-called “reciprocity” in the realm of weapons of mass destruction (WMD). Some have called on Israel to ratify the CWC immediately, others have called for it to end its policy of nuclear ambiguity, and still others have noted that this is why the region must move



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to focused discussion of a WMD Free Zone (WMDFFZ) in the Middle East.

What all of these calls have in common is their attempt to relate to weapons of mass destruction as if they can be detached from context – namely, from the (different) manner by which different states have conducted themselves with regard to these capabilities, and from the context of inter-state relations and threats.

Nowhere is this more apparent than with regard to Israel's stance of ambiguity in the nuclear realm,[1] whereby Israel neither denies nor confirms the various reports relating to its nuclear capabilities. This has been the situation for nearly half a century. The gap between what Israel has sought to achieve and has indeed achieved through its strategy of ambiguity, and what it is accused of doing under cover of ambiguity, is wide.

The following discussion considers the notions of transparency, secrecy, regional stability, and security/deterrence, all of which are relevant to the discussion of Israel's strategy but have often become skewed in the wider public debate.

Transparency tends to be regarded as an inherently positive value in international relations circles – to wit, the more transparent you are, the better. But is this true across the board? In Israel's case, not being transparent in the nuclear realm has enabled Israel to maintain a low profile, which has both served its interests and had advantages for the wider region. By virtue of Israel not talking, issuing threats, or taking other action with regard to its assumed nuclear capabilities, the result has been that most other regional states could (grudgingly) live with the situation and not seek their own capabilities. This is better for regional stability than if Israel were a declared nuclear state that could not be ignored. This is not to say that Egypt is happy with the situation; to the contrary, for years it has led a focused campaign to force Israel to join the Nuclear Non-Proliferation Treaty (NPT). Nevertheless, Egypt signed a peace agreement with Israel without demanding that it first join the NPT.

Once the rationale of maintaining a low profile is understood and Israel's notable restraint in the nuclear realm is taken into account, it should also be clear that the secrecy that Israel maintains in this regard is not designed to deceive potential enemies or necessarily to fool anyone. Israel adheres to an official policy of

neither confirmation nor denial, saying only that it will not be the first to introduce nuclear weapons to the region. Therefore, those who call on Israel to “drop the charade because everyone knows you're a nuclear state” are missing the point. At present, ambiguity is a strategic asset that provides Israel with a relatively stable and persistent situation.

Moreover, some calls for Israel to join the NPT are also based on erroneous assumptions, and assume that this would simply be a step in the direction of greater Israeli transparency – which they view as inherently positive – and cooperation with the international community. In fact, however, the only way that Israel (and India and Pakistan) could join the NPT is as a non-nuclear weapons state. Therefore, transparency and cooperation with the international community, as mandated by the NPT, are not the relevant issue; rather, this is a demand for disarmament. Indeed, when Egypt, the Arab League, or Iran has persistently called on Israel to join the NPT, these states are pursuing one goal only: to expose and then strip Israel of whatever capabilities, especially deterrence capabilities, it has. Israel maintains its low profile nuclear posture because it still faces self-declared enemies that challenge its very right to exist in the region as a sovereign state.

With respect to Israel's arms control options, the deciding factor concerning the pace at which Israel can adhere to global treaties or embrace possible new regional arrangements is the regional security situation. Israel not only lacks peaceful relations or significant political relations with many of its neighbors, but also lacks basic channels of communication with several of them. In such a situation, it is hard to imagine how strategic assets can be done away with. Israel is open to joining international treaties when appropriate, but is highly concerned by the number of hostile states in the region that have joined WMD treaties and then proceeded to cheat on their commitments, while purposely deceiving the international community. Therefore, Israel's preference is to proceed with regional talks: the first step is to sit down together and discuss the issues directly, with a view to achieving a consensus on an agenda. As far as the WMDFFZ conference idea (originally slated for 2012) is concerned, currently Israel is willing to engage in preliminary discussions, but the Arab states have



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reportedly refused to sit down with Israel in a non-NPT sanctioned framework (disregarding the fact that non-nuclear WMD are outside the purview of the NPT).

Finally, a word on Iran. Creeping into the debate on Iran's military nuclear potential is the question of Israel and regional WMD disarmament. If demands are made of Iran, some say, then what about Israel. Here it is essential to underscore what differentiates between Iran and Israel, and why Iran's nuclear ambitions must be curbed regardless of any regional arms control ideas. Iran, unlike Israel, is a prime example of a state that years ago, by ratifying the NPT, made a commitment to remain non-nuclear, for which it received benefits, but that then proceeded to defy that

very commitment while lying to the international community. Iran has accordingly lost its moral right to preach to others to do something that itself failed to do. In addition to its non-compliance with the NPT and its cheating, the current hostile regime in Tehran regularly issues severe threats that challenge the right of Israel to a sovereign existence and convey Iran's desire to change the face of the Middle East in the direction of an Islamic entity. These are goals that could be better advanced if Iran were to attain a military nuclear capability, and indeed, all evidence points in this direction. Clearly context matters. Without basic changes in Iran and in the region, there can be little expectation that the WMD situation will radically change.

[1] In fact, Israel's only declared policy is that of non-transparency (or opacity) of some of its nuclear facilities and activities. However, "ambiguity" is the term most commonly used.

Emily Landau is a senior research associate at the Institute for National Security Studies (INSS) in Tel Aviv, where she is also director of the Arms Control and Regional Security Project. She has published and lectured extensively on nuclear proliferation, arms control efforts, and regional security in the Middle East, including CSBMs, Arab perceptions of Israel's qualitative edge, Israeli-Egyptian relations, and the Arms Control and Regional Security working group of the Madrid peace process (ACRS); international efforts to confront the proliferation challenges posed by Iran and North Korea; Israel's nuclear image and policy; and developments in global nuclear arms control thinking in the post-Cold War world. Her current research focuses on regional dynamics and processes in the Middle East, and recent trends in global nuclear arms control thinking, including regarding the nuclear ambitions of determined proliferators. She is co-author of Israel's Nuclear Image: Arab Perceptions of Israel's Nuclear Posture (1994), co-editor of Building Regional Security in the Middle East: International, Regional and Domestic Influences (2003), and author of Arms Control in the Middle East: Cooperative Security Dialogue and Regional Constraints (Sussex Academic Press, 2006). Among her recent publications are The Obama Vision and Nuclear Disarmament (co-editor, INSS, 2011) and Decade of Diplomacy: Negotiations with Iran and North Korea and the Future of Nuclear Non-Proliferation (author, INSS, 2012). Dr. Landau currently teaches nuclear strategy, negotiations and arms control in the International School of the University of Haifa (from 2008), the Executive MA program in Diplomacy and Security at Tel Aviv University (from 2012) and in the Lauder School of Government at IDC, Herzliya (from 2013). She has taught in additional programs at Tel Aviv University over the past decade. She is a frequent commentator to Israeli and leading international media on her topics of expertise, and an active participant in a range of Track II initiatives dealing with arms control and regional security in the Middle East. She has served on the steering committee of EuroMeSCo, and serves on the board of advisory editors of Fathom. She holds a BA and MA from Tel Aviv University, a Ph.D. from the Hebrew University of Jerusalem.

Ephraim Asculai worked at the Israel Atomic Energy Commission (IAEC) for over 40 years, mainly on issues of nuclear and environmental safety. In 1986, he went to work at the IAEA in Vienna on issues of radiation protection of the public. During 1990-1991 he was the Scientific Secretary of the International Chernobyl Project.

In 1992, Dr. Asculai returned to Israel and became heavily involved in the deliberations leading to the conclusion of the Comprehensive Test-Ban Treaty (CTBT). In his final period at the IAEC he served as the Director of External Relations. During his sabbatical at the Institute for Science and International Security (ISIS) in Washington, D.C. he authored Verification Revisited: The Nuclear Case, published by the ISIS Press. Dr. Asculai retired from the civil service in 2001. In 2002 he joined the Jaffee Center for Strategic Studies (now incorporated into the Institute for National Security Studies). He has since published several papers dealing with WMD non-proliferation in general, and Middle East issues in particular, including the monograph Rethinking the



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Nuclear Non-Proliferation Regime in 2004.

Shimon Stein joined the INSS research staff after a long career in the Foreign Service. He served as Israel's ambassador to Germany (2001-7). Prior to this appointment he served in the Ministry of Foreign Affairs as deputy director general for the CIS, as well as Eastern and Central Europe. Ambassador Stein held additional MFA posts in Washington, Germany, and Israel, and was a member of Israel's delegation to multilateral negotiations on arms control. Ambassador Stein is also an international consultant, working for American, German, and Israeli articles. He publishes articles regularly in the German press on foreign and security issues. He received his Ph.D. in Atmospheric Sciences from the Hebrew University in Jerusalem.

Al-Qaeda eyes Gaddafi's uranium and missiles

Source: <http://pislamauseacentral.blogspot.gr/2013/10/al-kaeda-eyes-gaydaffis-uranium-and.html>

The barefoot rebel in the pork pie hat is a troubled man. A former human trafficker, today he presides over a vast arsenal in southern Libya that includes an estimated 4,000 surface-to-air missiles, each capable of downing a passenger jet, and has access to thousands of barrels of uranium yellowcake (ore sometimes used to produce nuclear weapons) in an abandoned desert warehouse. Between receiving al-kaeda emissaries seeking to buy his stocks, and Western intelligence agents who want to secure them, he wonders who may kill him first "Sometimes I'm afraid that al-kaeda will get me," said Bharuddin Midhoun Arifi, who commands 2,000 fighters in the Libyan city of Sabha. "Other times I



Other times I fear that the Americans or French or British will fire missiles from the sea to destroy all I control".

He was catapulted from smuggler to rebel kingpin by the fortunes of revolution. When Colonel Gaydaffi was killed by rebels two years ago, Arifi found himself one of the principal heirs to the regime's abandoned weapon stocks in Sabha.

Thousands of barrels of yellowcake lie corroding in the warehouses

The massive inheritance brought mixed rewards. Since Gaydaffi's downfall, Sabha and Libya's southern desert, have been beset by the greatest challenges dogging the country in its chaotic emergence from revolution.

Collapsed border controls, unguarded arsenals, internecine tribal fighting and the absence of credible

central authority are producing the security equivalent of a perfect storm. Lawlessness extends to the local hospital, where patients are regularly shot in their beds. Al-kaeda has been quick to step into the void.

"Al-kaeda come to visit me, asking to buy weapons, asking for heat-seeking missiles, asking for uranium," Arifi said, brow furrowed.

"It started this year when the French sent troops to chase them out of Mali. Al-kaeda came to Sabha asking for medical



supplies. They received some. Next they came back asking for weapons".

Speaking at a Gaydaffi-era military installation on the outskirts of the city, he claimed that so far he had resisted al-kaeda's approaches.



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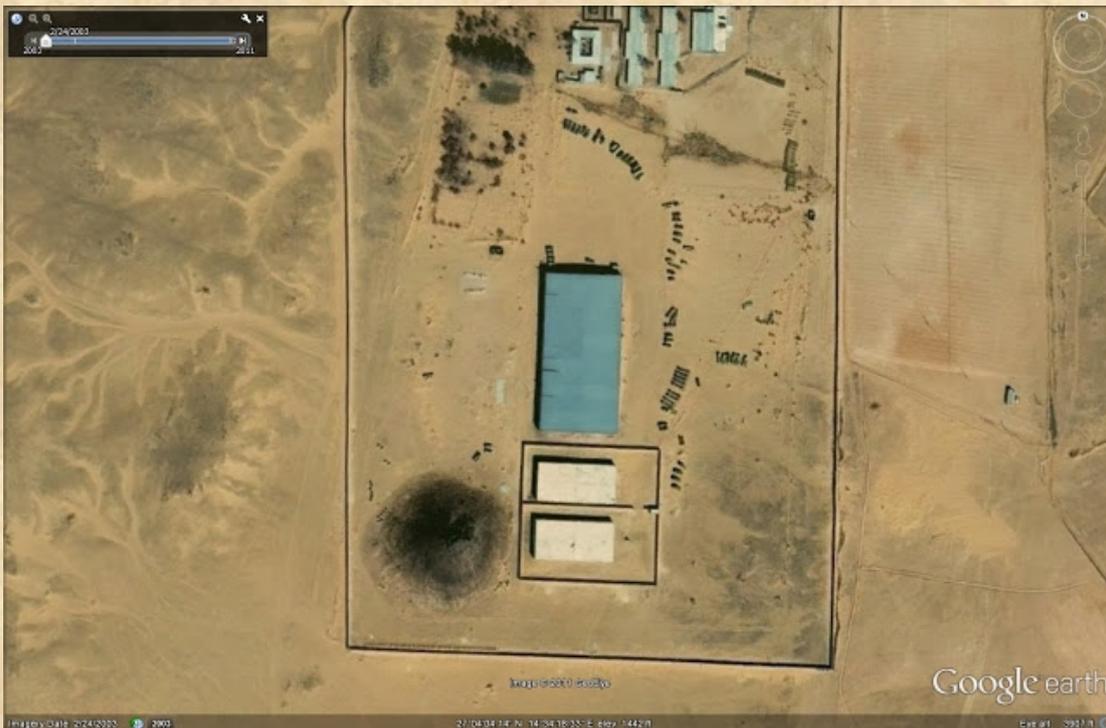
“The last offer was for a million dollars,” he added, describing the most recent overture made by an al-kaeda emissary. “He even said that they could supply a plane to take the stuff away. I told him that this was another matter, as it all belonged to my government. But I am afraid of al-kaeda. They come again and again and make me feel uncomfortable. Who is there to support me against them?”



However, the ranks of mortars and rocket launchers sat in neat rows next to newly made crates packed with weaponry destined for Syria, suggesting that at least some hardware was being transferred to foreign countries. Hundreds of Libyans have joined the rebel forces fighting the Assad regime.

Sabha's stock of uranium, acquired by

Libya as part of Gaydaffi's nuclear programme, has been public knowledge since it was discovered by



rebels in September 2011.

An inventory compiled by the International Atomic Energy Agency later that year accounted for 6,400 yellowcake barrels corroding in a Sabha warehouse under the control of Arifi's men. The head of the UN mission in Libya at the time said that the uranium, which after intensive processing could become weapons grade, should be moved as soon as possible.

Nothing was done. The Libyan Foreign Minister, Mahound Abdul Aziz, repeated the call only last month. Yet still the barrels remain there, in an unguarded complex in a desert littered with missiles. As well as Mr Arifi's men, a rival militia boasts control of the site. Yesterday, however, I found it unguarded and abandoned, with not a single checkpoint along the desert approach road. A few well-aimed blows on a padlock from a slightly built local man wielding a metal pole were all it took to gain access to the uranium. Inside one of two warehouses containing the yellowcake



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sat banks of blue barrels, some of them opened and taped with yellow and black radioactive warnings “We have no use for the yellow uranium ourselves and are frightened of it,” Arifi told me. “My men don’t like guarding the site as they believe it will make their skin fall off. So we guard it from a nearby checkpoint. Maybe someone could steal one or two drums if they wanted, but not more”. He alleged that



in addition to al-kaeda emissaries, he had received three visits by French intelligence officers seeking to establish an inventory of his weaponry. He described them as “crying to see the uranium”

Of greater immediate concern to Western officials than the uranium, though, is the haemorrhage of Sabha’s

ill-secured stocks of MANPADS surface-to-air missiles into al-kaeda’s hands. Arifi claimed not to know precisely how many MANPADS were stored in the three arsenals he controlled, but estimated “nearly 4,000”.



Arifi with two of the estimated 4,000 missiles that are under his control

“Arms dealers approach me the whole time wanting to buy the missiles,” he said. Asked to produce a sample, he disappeared, reappearing shortly with two SAM-7s in his arms. “How many do you want?” he laughed.

Close to Libya’s borders with Algeria, Chad and Niger, the area south of Sabha was in Gaydaffi’s day a highly militarised zone manned by thousands of troops guarding Libya against outside threats. When the regime fell, the army and air force that once patrolled the desert frontier disappeared. Today, the few checkpoints that link Sabha to cities farther north are sparse affairs manned by little more than ad hoc groups of armed youths.



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Adding to the instability, thousands of illegal immigrants cross the border each month from the sub-Saharan, heading north through Sabha, passing into an area where traditional tribe feuds that simmered through the 42 years of Gaddafi's power have re-ignited.

Sabha's hospital, its walls pockmarked by fresh gunfire, bore testament to the rewards of two years of liberty.

"I've had five patients killed inside my intensive care unit while I've been on duty in the last few weeks," an exhausted young doctor, Maryam Issa, said as she tried to bring order to the crowded trauma unit.

"And those are just the ones I've seen killed. Two of them were already wounded and were shot in their beds. The fighting starts outside, and comes into the wards. It is always worse at night" She said that she treated on average 30 gunshot injuries a week, and that 60% of her patients were foreigners, many of whom spoke languages she did not understand.

EMP Mythology???

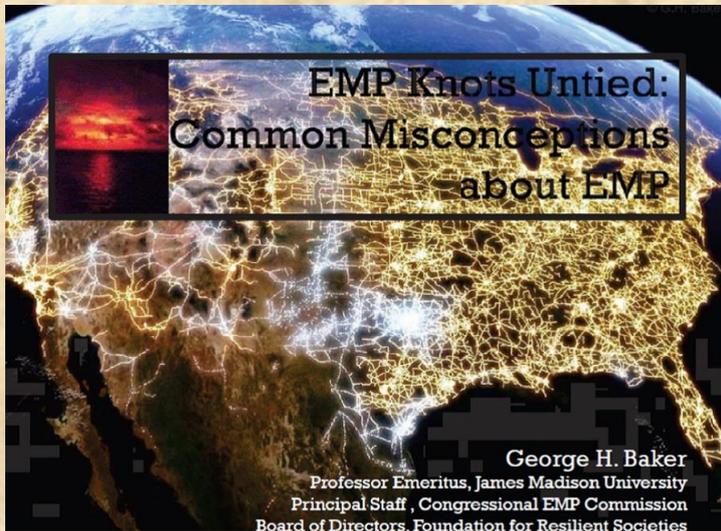
By Ambassador Henry F. Cooper

Source: http://highfrontier.org/october-22-2013-emp-mythology/#sthash.V7JgIkXf.9ZmOEjCZ.dpuf?utm_source=EMP+Mythology%3F%3F%3F&utm_campaign=ACD+BLOG&utm_medium=email

What will it take to get the powers that be to initiate timely and effective countermeasures to the existential threat posed by an electromagnetic pulse (EMP), from either manmade or natural causes? Whether it will lead to effective actions is uncertain, but understanding a number of misconceptions about the threat is very important to those who seek to develop a strategy to counter events that could lead to the death of an overwhelming majority of all Americans.

High Frontier seeks to inform all who will listen that America's leaders seem oblivious to an existential threat from many who wish to destroy us—namely any with nuclear-armed ballistic missiles who detonates even a single such weapon at high altitude (say a hundred miles) over the United States.

The resulting effects from that detonation would kill no one immediately, but its electromagnetic pulse (EMP) would likely shut down for an indefinite period the electric power grid, which literally sustains our



way of life. The loss of our "just in time" delivery systems for food, water, medicine, transportation, banking, communications, etc. would return us to an 18th century existence without the benefits of an agrarian society that then assured our survival.

Our email messages since last Fall have emphasized that America's life blood—electricity—flows through the electric power grid, illustrated in the title slide from a briefing by Dr. George H. Baker, an EMP expert and professional colleague. I'll return

to a discussion of this important briefing after a few more introductory comments.

Status Quo: Protect Nukes But Leave People Vulnerable?

If we lose the electric power grid, several hundred million Americans could perish within a year . . . but the powers that be seem oblivious to this reality.

Presumably, they are uninformed. Or maybe they believe the threat is exaggerated by a bunch of conspiracy minded nuts, who also might be concerned about Orson Wells' fictional attack by aliens from outer space.



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But our Cold War experience confirms that the EMP threat is real and that we know how to protect against it. This knowledge was highly classified following our introduction to the consequences of EMP in 1962, when the Starfish Prime high altitude nuclear test damaged electrical systems in Hawaii, some 900 miles away. Furthermore, we have long known that today's solid state electronics are much more vulnerable than were Hawaii's vacuum tube electronics exposed to Starfish Prime.

We also have long known how to harden out critical electrical systems to survive such effects. We developed, deployed and maintained hardening techniques to assure our strategic systems could survive and be employed by the President to retaliate to a Soviet first strike employing EMP. That we were correct in assuming this precursor attack was a key part of their war plan was confirmed by information we obtained from Russians after the Cold War.

Furthermore, the Cold War technologies have since been markedly improved—in designing both systems to use EMP offensively and countermeasures to survive if attacked with these improved EMP weapons.

In 2008, the congressionally chartered EMP Commission successfully sought and got official approval to declassify much on these matters, and their report became public knowledge as well as testimony by the commission's chairman, Dr. William R. Graham, who in his last government post served as President Reagan's Science Advisor.

I served with Bill at the Air Force Weapons Laboratory in the 1960s when we both focused on understanding nuclear weapons effects and protecting our strategic systems against those effects. Bill participated on Starfish Prime and quickly acquired a national reputation on EMP. He served as a senior national level advisor on how to harden our strategic systems and their supporting command, control and communications systems to assure that the President could retaliate with our nuclear forces if we were attacked by the Soviet Union.

So—during the Cold War, we hardened our nuclear capable forces. As a Deputy Assistant Secretary of the Air Force, I was privileged to oversee many of these important programs in the late 1970s and early 1980s—and personally know that assuring their survivability is feasible. Hopefully, the powers that be still maintain the survivability of our strategic systems in today's uncertain world.

But I also know from that first-hand experience that we did essentially nothing to harden our civil critical infrastructure—that in turn depends on the survival of the electric power grid. Rectifying this condition is an urgent requirement in today's world—one which Bill and I both continue to seek to rectify.

Bill and I have continued as professional colleagues—and, in particular, we both recently joined the Board of Directors of the Foundation for Resilient Societies. This non-profit foundation is currently focused on protecting the U.S. electric grid against the long-term loss of commercial electric power that could be caused by a manmade (nuclear attack) or natural (major solar storm) EMP event. Supporting this foundation is an important complement to High Frontier's efforts to defend against ballistic missiles that could create devastating EMP effects.

Overcoming Persistent EMP Misconceptions

So, we know the threat is real and we know how to deal with it—from a technical perspective; and, I might add, also from an economic perspective. To do so requires getting the powers that be to act, which implies that they should understand a number of misperceptions.

The above title chart is from a briefing by another friend and director of the Foundation of Resilient Societies, Dr. George H. Baker. During his government career, he directed the Department of Defense EMP programs. He also served on the Principal Staff of the EMP Commission and remains actively involved in our efforts to inform all who will listen about the EMP threat, about which there are many misconceptions.

George discussed the following misconceptions, with enough authoritative detail to hold the attention of technologists and hopefully not to go over the head of lay persons. He notes misconceptions that overstate and understate the intensity and extent of the EMP threat.

COMMON EMP MISCONCEPTIONS

(From a briefing by Dr. George H. Baker)

- EMP will burn out every exposed electronic system
- EMP effects will be very limited and only result in “nuisance” effects in critical infrastructure systems



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- EMP will cause “upset” effects—not permanent damage
- These upset effects are not serious with easy recovery
- Long haul fiber optic lines are not vulnerable to EMP
- To protect our critical national infrastructure would cost a large fraction of the GNP
- Megaton class weapons are needed to cause any serious EMP effects—low yield “entry-level” weapons are not a concern
- Only late-time EMP (E3), not E1 will damage electric power grid transformers
- Ground burst EMP effects are limited to 2-5 kms from a nuclear explosion where blast, thermal and radiation effects dominate

Misconceptions that overstate the problem may discourage folks from trying to deal with the looming danger—they could lead to what some have called the “On the Beach” syndrome—a reference to the 1959 movie of that title. (If you wish to see this film, click [here for the first hour](#) and here [for the second hour](#).) This film exaggerated radiation fallout conditions following a nuclear exchange, leading to the death everyone on earth, leading some viewers to suggest that “the living would envy the dead”—and to cancel the then existing civil defense program as America drifted into a mutual suicide pact with the Soviet Union called Mutual Assured Destruction, or appropriately MAD for short. This policy presumed that the world would be safe if either side would destroy the other if it were first attacked.

It was this view that led to the Anti-Ballistic Missile (ABM) Treaty which made it illegal to seek to defend Americans at home against ballistic missile attack. It took President Ronald Reagan’s Strategic Defense Initiative (SDI), which I was privileged to lead as its third director, to challenge that view and President George W. Bush’s determination to withdraw from that treaty after 30 years under its ill-advised and restrictive terms, the legacy of which regrettably still lives. Story for another day.

The second and third misconceptions, both of which understate the problem, are important because they lead the powers that be to do nothing, never mind the downside risks if they are proven to be wrong. Taking this risk is ludicrous in view of George’s fourth misconception, namely that rectifying the vulnerability of the electric power grid is expensive. George notes in his briefing that hardening the grid would cost electric power subscribers pennies a month. Pretty cheap insurance, it seems to me—and to those with whom I have discussed this issue.

Regarding the fifth misconception, advanced nuclear weapons designs have gone far beyond the designs employed in our atmospheric nuclear tests which ended a half century ago; and we know that very low yield nuclear weapons can produce debilitating EMP effects over large areas—essentially all territory within a line of sight from a high-altitude detonation. Some believe that even North Korea has tested these designs, transferred to them from Russia and China. If so, Iran is not far behind.

Furthermore, even non-nuclear weapons have been invented that produce EMP effects over limited ranges—and could be used in a coordinated terrorist attack scenario to shut down portions of the grid.

As a prelude to discussing the sixth misconception, understand that E1 and E3 are, respectively, short wavelength and long wavelength components of a nuclear produced EMP. From extensive simulation testing, we know E1 causes damage to the solid state electronics that are essential to many components of our critical civil infrastructure, including the electric power grid. E3 is a primary threat to the electric power grid because the long wavelength component couples into the long lines that interconnect the power plants of the grid. The power lines channel lethal charges to destroy the key large transformers that are no longer produced (by hand, so their construction take months) in the United States and without which the grid will collapse. Notably, E3 would also be produced by a massive solar flare. E1 would not. (The E2 component, by the way, has a mid-range wavelength like lightning and is handled by well-known countermeasures, such as surge arrestors.)

George’s seventh misperception refers to the fact that a nuclear explosion on the surface of the earth—perhaps to attack very hard structures with blast effects— also produces an EMP that can couple to the power grid network illustrated in his title slide.

Bottom line: The above misconceptions, if understood by the American people, will help them to demand that their representatives provide for the common defense.

Implications for High Frontier Plans

I, of course, applaud Dr. Baker’s efforts, and those of others who are pressing the powers that be to understand and counter EMP effects. I am particularly interested in working this problem



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from the “bottom up” so that many local and state authorities will follow the lead of Representative Andrea Boland (D-Sanford), of the Maine House of Representatives, who successfully advocated in

**HIGHLIGHTS OF MAINE LD 131**

- **Requires the Maine Public Utilities Commission (PUC) to examine:**
 - Vulnerabilities of Maine’s transmission infrastructure to a geomagnetic disturbance (GMD) or an electromagnetic pulse (EMP)
 - Potential to disable, disrupt or destroy a transmission and distribution system
 - Potential mitigation measures, and recommended actions
- **Directs the PUC to monitor the Federal Energy Regulatory Commission (FERC) and the North American Electric Reliability Corporation (NERC) development of reliability standards related to GMD and EMP**
- **Requires a January 20, 2014 report, in time to support 2014 follow-up legislation.**

only a six month period a historically important landmark bit of legislation, LD 131, which passed the House unanimously and with only two dissenting votes in the Senate.

My colleagues with the Foundation for Resilient Societies are working closely with Andrea to support her efforts in support of the people of Maine. Her successful effort will serve as an important pattern for other state legislators to follow—and they should be of great interest to those concerned at the Federal level, particularly those seeking serious consideration of the Shield Act. The Shield Act, advocated by the EMP Caucus co-chaired by Reps. Trent Franks (R-AZ) and Yvette Clark (D-NY), if enacted, will protect the grid from manmade attacks that can happen and natural EMP events that will occur, the only uncertainty is when.

We have begun working with local and state officials in Florida to help them understand EMP issues and seek effective countermeasures. In addition to considering ways to harden their grid, we hope they will seek to build Aegis Ashore missile defense sites to defend against ballistic missiles that might be launched from vessels in the Gulf of Mexico. We are considering specific site locations on Tyndall AFB in the Florida panhandle and on Homestead AFB near the southern tip of the Florida peninsula. In particular, we encourage exploitation of the same Aegis Ashore systems being deployed in Romania (by 2015) and Poland (by 2018). No additional research and development money is required—except perhaps to prepare specific sites

Such defenses would be critically important to protect against irreparable EMP damage to the key large transformers of the electric power grid—that under certain well known conditions could cause a complete failure of the electric power grid for an indefinite period and to the ultimate death of several hundred million Americans within the following year.

MEMBERS OF THE EMP COALITION

- | | |
|---|---|
| <ul style="list-style-type: none"> • Hon. Newt Gingrich, Former Speaker of the House, Honorary Co-Chairman • Hon. R. James Woolsey, Former Director of Central Intelligence, Honorary Co-Chairman • Hon. Allen West • Amb. Henry Cooper, High Frontier • David Bellavia, EMPact America • Avi Schnurr, Electronic Infrastructure Security Council • William Forstchen, Author, One Second After • Brian Kennedy, Claremont Institute • Bronius Cikotas, Member, EMP Threat Commission • Chris Beck, Electronic Infrastructure Security Council • Frank Gaffney, Center for Security Policy • Chuck Manto, InfraGard • Cindy Ayers, Center for Strategic Leadership • Clare Lopez, Former CIA Operations Official • Cliff May, Foundation for Defense of Democracy • Lieutenant Gen. William Boykin, Family Research Council | <ul style="list-style-type: none"> • George Baker, Member, EMP Threat Commission • James Carafano, Heritage Foundation • Ken Timmerman, Foundation for Democracy in Iran • Michael Del Rosso, Former Chairman, IEEE-USA Critical • Infrastructure Protection Committee • Michael Maloof, Author, A Nation Forsaken: EMP: The Escalating Threat of an American Catastrophe • Peter Huessy, American Foreign Policy Council • Peter Pry, Executive Director, EMP Threat Commission • Hon. Andrea Boland, Maine House of Representatives • Rev. Lou Shelton, Traditional Values Coalition • Ross Howarth, EMPact America • Tom Popik, Foundation for Resilient Societies |
|---|---|

We have also joined forces with a new EMP Coalition being facilitated by Frank Gaffney, my friend, former Reaganite and President of the Center for Security Policy. The members of the EMP Coalition are listed in the photo.

The federal government is failing its first duty “to provide for the common defense.” Providing effective missile defenses and hardening the electric power grid as quickly as possible should be a top national priority. Thus, we will continue to urge Washington powers that be to undertake the Shield Act to harden the electric power grid and to



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enhance our ballistic missile defenses, especially for our citizens on the East Coast and around the Gulf of Mexico, where U.S. citizens are completely vulnerable to ballistic missiles launched from vessels in the Gulf—or from Latin America, e.g., Venezuela.

Frankly, Washington seems not inclined to counter this threat anytime soon; so we consider our message to grass roots America to be urgently important. Our local and state authorities need to understand these issues and what they might do if their federal representatives continue to fail “to provide for the common defense.”

In informing Floridians and their representatives of their vulnerability against ballistic missiles launched from the Gulf of Mexico, we will emphasize that near-term affordable solutions exist. Hopefully, their legislature will follow Maine to harden their electric power grid, while holding the Washington authorities accountable for their oath to provide for the common defense. Hopefully, in joining such an effort, other states also will be encouraged to follow.

Radioactive water leaks at Fukushima as operator underestimates rainfall

Source: <http://ca.news.yahoo.com/radioactive-water-leaks-fukushima-operator-underestimates-rainfall-023633953--finance.html>

Highly radioactive water overflowed barriers into Japan's Fukushima Daiichi nuclear power plant, its operating utility said on Monday, after it underestimated how much rain would fall at the plant and failed to pump it out quickly

Dealing with hundreds of tonnes of groundwater flowing through the wrecked nuclear plant daily is a constant headache for the utility and for the government, casting doubt on Prime Minister Shinzo Abe's promises



enough.

The utility, Tokyo Electric Power Co, also known as Tepco, has been battling to contain radioactive water at the nuclear complex, which suffered meltdowns and hydrogen explosions following a devastating earthquake and tsunami in March 2011.

that the Fukushima water "situation is under control."

After heavy rain on Sunday, water with high levels of radioactive strontium overflowed containment areas built around some 1,000 tanks storing tonnes of radioactive water at the plant, Tepco said. The radioactive water is a by-



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product of an improvised cooling system designed to keep the wrecked reactors under control in case of further disaster.

Tepco said it had planned to pump out the accumulating rainwater into empty tanks, check it for radioactivity, and if it was uncontaminated, release into the sea. But the company was overwhelmed by the amount of rainwater.

"Our pumps could not keep up with the rainwater. As a result, it flowed over some containment areas," said Tepco spokesman Yoshikazu Nagai. The company had planned for 30 to 40 millimeters of rainfall on Sunday, but by late afternoon the rainfall already stood at around 100 millimeters, he said.

The ongoing crisis at the Fukushima Daiichi plant, 220 km (130 miles) north of Tokyo, highlight the immensity of the task of containing and controlling radioactive water and eventually decommissioning the plant, processes expected to take decades.

Earlier this year, Tepco lost power to cool spent uranium fuel rods at the plant after a rat

overflowed, with one of them containing Strontium-90 as highly concentrated as 710 Becquerels per liter - 71 times higher than the level set by the company as safe for release.

Strontium-90 is a by-product of the fission of uranium and plutonium in nuclear reactors as well as nuclear weapons, the U.S. Environmental Protection Agency says on its website.

Tepco said it will prepare some 30 extra pumps and lay additional 10 kilometers of pipes to prevent overflowing from happening again.

The utility has come under increased scrutiny after it found in August that 300 tonnes of highly radioactive water had leaked from one of the hastily built storage tanks at the Fukushima site. Japan stepped up support for the embattled utility in September, pledging half a billion dollars to help contain contaminated water at Fukushima.

Tepco is seeking permission to restart its only remaining viable plant - Kashiwazaki Kariwa, (photo below) the world's largest nuclear power



shorted wiring at the plant. In the latest incident, containment areas surrounding 12 of 23 groups of tanks

station, to cut high fuel costs and restore its finances

