



RADIATION EXPOSURE AT THE AIRPORT



The single most important thing you can do to avoid these dangerous levels of radiation is to **avoid flying between the hours of 8 AM and 5 PM**, noon being the worst, when you'd be flying along many thousands of feet closer to the radiating sun. If you fly at night, the earth is blocking the powerful rays, and your radiation exposure is slashed by 99%.

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By Dr. Joe Mercola, <http://articles.mercola.com/sites/articles/archive/2013/02/06/backscatter-screening-machine.aspx>

RAPISCAN "BACKSCATTER" SCREENING MACHINES, WHICH PROJECT X-RAY BEAMS ONTO YOUR BODY USING IONIZING RADIATION, ARE BEING REMOVED FROM U.S. AIRPORTS.

Since ionizing radiation causes DNA damage that can lead to cancer, and its effects are cumulative, even the supposedly small levels of exposure from the backscatter machines was concerning... so much so that the European Commission banned x-ray body scanners that use backscatter radiation from airports back in 2011.

But it was *privacy*, not safety concerns, that prompted the U.S. removal... and despite what many media outlets are reporting, the same type of machine, made by a different manufacturer, may be showing up in Rapiscans' place.

Privacy Concerns Prompt Removal of Rapiscan Backscatter Machines

The Rapiscan backscatter machines create a detailed reflection of your body that is displayed on a monitor viewed by a remotely located TSA officer. Because the pictures are so detailed, they earned the moniker "naked body scanners" and have prompted retaliations from privacy rights activists, who liken the pictures to a "virtual strip search."

To remedy this, as part of the FAA Modernization and Reform Act of 2012, all U.S. Transportation Security Administration (TSA) body scanners were supposed to be equipped with a type of software called Automated Target Recognition (ATR), which turns the graphic images into generic outlines of a human body, by June 2012

This was later pushed back to June 2013. Rapiscan was unable to meet this Congressional mandate, and as a result TSA terminated their contract with the company.

According to the TSA blog, most of the backscatter units being removed will be replaced with millimeter wave units,¹ which use electromagnetic waves to create a generic image of passengers. The millimeter wave unit looks more like a round booth (the backscatter machines look like two large blue boxes) and is subject to less controversy because it does not use dangerous ionizing radiation and therefore likely does not carry the same health risks.

However, TSA has also reportedly signed a \$245-million contract with American Science and Engineering, which uses the same backscatter technology as Rapiscan for their machines, but has the updated software to address the privacy concerns. As the Alliance for Natural Health (ANH) reported:²

"In other words, while passengers may not have their privacy violated any more, they still will have their health endangered."

As for the Rapiscan machines that are being removed... don't expect them to disappear entirely. The TSA reported:³

*"All Rapiscan AIT units currently operational at checkpoints around the country, as well as those stored at the TSA Logistics Center, will be removed by Rapiscan at their expense and stored until they can be **redeployed to other mission priorities within the government.**"*

Did the U.S. Government Ignore Backscatter Safety Concerns?

In 1998, a panel of radiation experts convened by the U.S. Food and Drug Administration to evaluate the safety of backscatter technology raised serious questions about their safety. It had long been accepted that humans should not be exposed to x-ray radiation of any kind unless medically justified.

Yet, despite concerns that even low-level exposure to the radiation could contribute to cancer, the machines were employed for use in airports – a decision made not by the FDA but by the TSA. According to a ProPublica/PBS NewsHour investigation:⁴

"Research suggests that anywhere from six to 100 U.S. airline passengers each year could get cancer from the machines. Still, the TSA has repeatedly defined the scanners as 'safe,' glossing over the accepted scientific view that even low doses of ionizing radiation – the kind beamed directly at the body by the X-ray scanners – increase the risk of cancer.

...Because of a regulatory Catch-22, the airport X-ray scanners have escaped the oversight required for X-ray machines used in doctors' offices and hospitals. The reason is that the scanners do not have a medical purpose, so the FDA cannot subject them to the rigorous evaluation it applies to medical devices.

Still, the FDA has limited authority to oversee some non-medical products and can set mandatory safety regulations. But the agency let the scanners fall under voluntary standards set by a nonprofit group heavily influenced by industry.

As for the TSA, it skipped a public comment period required before deploying the scanners. Then, in defending them, it relied on a small body of unpublished research to insist the machines were safe, and ignored contrary opinions from U.S. and European authorities that recommended precautions, especially for pregnant women. Finally, the manufacturer, Rapiscan Systems, unleashed an intense and sophisticated lobbying campaign, ultimately winning large contracts."

Backscatter Radiation Levels May be Higher Than You're Being Told

A letter written by five professors⁵ revealed that there has not actually been any verifiable scientific testing of the safety of airport scanners – and that the levels of radiation being used are likely much higher than the public has been led to believe. These scientists believe that the high-quality images produced cannot possibly be obtained with the low levels of radiation described, and that the actual level may be 45 times higher than what the manufacturer is claiming.

The supposed "testing" of the Rapiscan Secure 1000, the most widely deployed X-ray scanner, was actually performed on a mock-up of spare parts "said to be similar to those that are parts of the Rapiscan system." In addition, none of these tests have ever been peer reviewed – the data and even the names of the researchers who carried out the tests have been kept secret from the public.

Not to mention, the former Homeland Security chief and co-author of the PATRIOT Act, Michael Chertoff, has been one of the primary promoters of full-body scanners, and is, not so ironically, a highly paid consultant for the companies that sell them... Even if we're not being *lied to*, common sense would dictate that we need to proceed with caution and not expose millions of travelers of all ages, and with any number of medical conditions, to unknown risks – including risks from human error or technological malfunction. Already, ANH reported:⁶

"A report from the Department of Homeland Security⁷ found inconsistencies in how the machines are calibrated to ensure radiation safety and image quality, and noted that not all TSA screeners have completed required radiation safety training."

What are Your Options for Safer Airport Screening?

In the United States, although the Rapiscan backscatter units are being removed, other backscatter technologies may soon take their place, so remember that you always have the right to opt-out of x-ray body scanners while traveling and can choose to have a manual pat-down instead. Personally, as a

very frequent air traveler, I ALWAYS opt-out of the x-ray scanner. Remember, the European Commission has already banned scanners that use backscatter radiation, noting:⁸

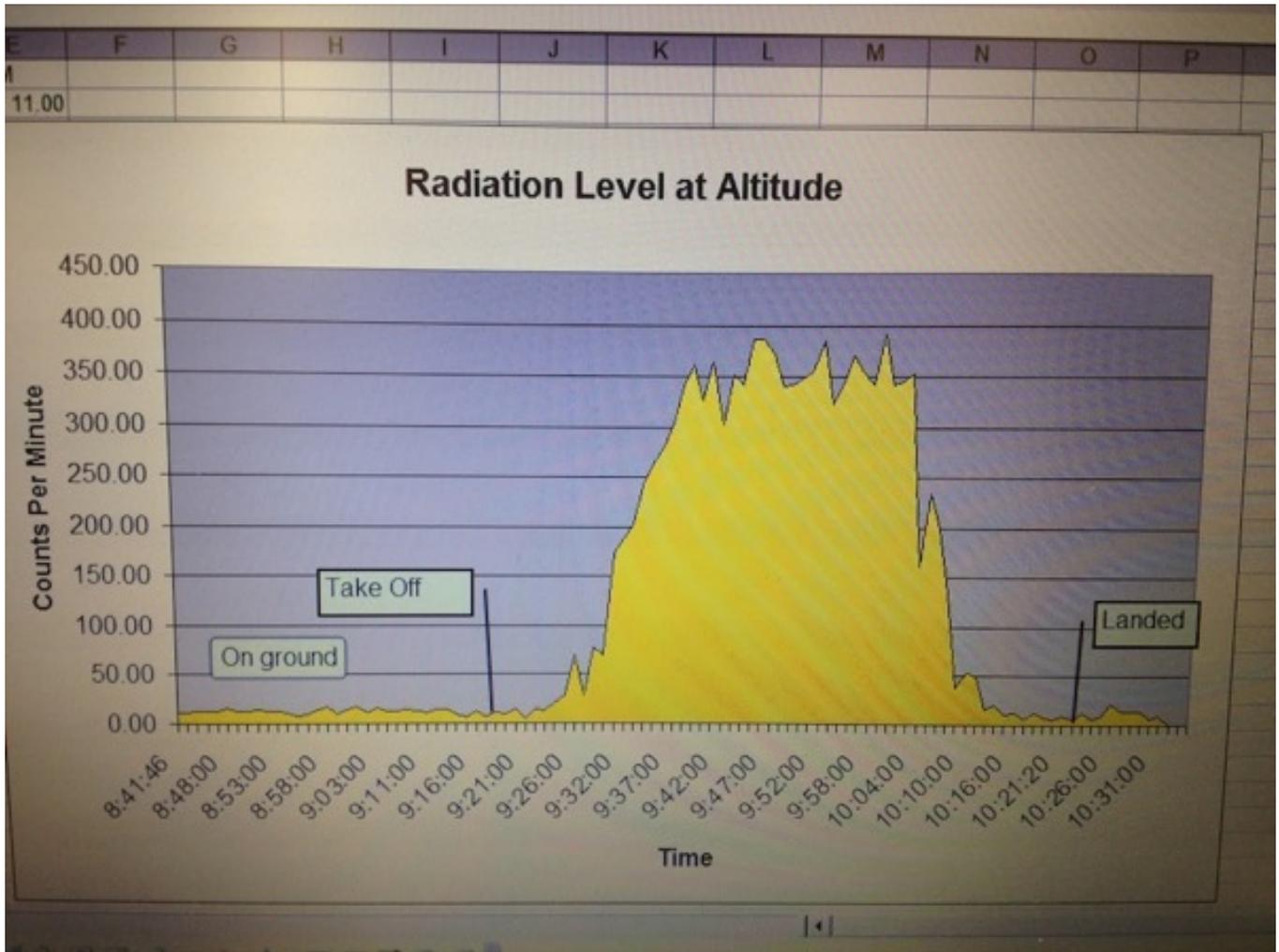
"In order not to risk jeopardizing citizens' health and safety, only security scanners which do not use X-ray technology are added to the list of authorized methods for passenger screening at EU airports."

If you're a frequent traveler, you can also [sign up for Global Entry](#) to become a "trusted traveler." It costs \$100 to join, and requires a background check and interview before you're approved, but once you're accepted you may be able to bypass security screening at airports. The interview is typically done at the airport and takes quite a while to schedule, usually a few months, so overall it will take you about 3-4 months to get this security clearance after your initial application.

Additionally, if you're concerned about radiation exposures when traveling by air, one way to reduce your radiation exposure is to fly at night. In addition to opting out of the full-body scanner. I also take 8 mg of [astaxanthin every day](#), which is believed to profoundly limit damage from ionizing radiation.

RADIATION LEVELS BEFORE, DURING, AND AFTER A DAYTIME FLIGHT (SO TRY TO FLY AT NIGHT)

Source: unknown



ARE X-RAY PROCEDURES EQUIVALENT, IN EXTRA RADIATION DOSE, TO TAKING AN AIRPLANE TRIP?

By John W. Gofman, M.D., Ph.D, and Egan O'Connor, Editor of CNR Books

February 28, 2000

<http://www.ratical.org/radiation/CNR/RMP/planes+xrays.html>

X-ray-givers sometimes claim that the extra radiation received during an x-ray procedure will be no greater than the extra radiation received during an airplane trip. Often, they fail to mention that x-ray doses can vary by 10,000-fold, from one type of x-ray procedure to another. Only a few types of procedures deliver a dose equivalent to the extra dose from an airplane flight. Most x-ray procedures will deliver a dose much higher.

Unless an x-ray-giver can tell you what *your* absorbed x-ray dose will be, he/she cannot properly assure you that it will be equivalent to the extra radiation dose from an airplane trip. Your dose may be 100 times or 10,000 times higher.

The extra radiation dose from flying depends on altitude and on latitude. The extra dose on commercial flights in the USA is about 0.0003 unit (rem) per *hour* of flying. The entire body absorbs the extra dose. By contrast, medical x-ray procedures irradiate only *part* of your body --- say, one-third. Therefore, the airplane dose needs multiplication by 3 before it is compared with an x-ray procedure which irradiates one-third of the body. To round-off, we can "credit" each *hour* of flying as an extra medical exposure of 0.001 unit.

Here is a reasonable *approximation*: If an x-ray procedure, covering one-third of your body, delivers an average dose of 1 unit (rem, rad, roentgen) to the internal organs in the x-ray beam, then the procedure delivers an extra radiation dose equivalent to about 1,000 hours of flying.

10.000	rem absorbed internal dose from x-rays ~	10,000 hrs flying
1.000	rem absorbed internal dose from x-rays ~	1,000 hrs flying
0.100	rem absorbed internal dose from x-rays ~	100 hrs flying
0.010	rem absorbed internal dose from x-rays ~	10 hrs flying

Certain "nuclear medicine" procedures cause *whole*-body irradiation. For instance, the whole-body internal dose from the common thallium-201 injection is estimated by the thallium-suppliers at about 0.45 rad, for an adult. This would be *approximately* equivalent to 450 hours of flying times 3, or 1,350 hours of flying.

SIX SECURITY SCREENERS CURIOUS ABOUT THEIR BRAINS FACE DISCIPLINARY ACTIONS FOR MISCONDUCT

Source: <http://www.9news.com/storyfull.aspx?storyid=24705>

Written by: [Deborah Sherman](#), I-Team Reporter

A security screener at Denver International Airport has been reprimanded and several others at airports across the country put on administrative leave for sending their bodies through checkpoint x-ray machines to see what their brains look like.

[9NEWS I-TEAM Reporter Deborah Sherman with more on the screeners who sent themselves through x-ray machines. 5 p.m. Feb. 23, 2004.](#)

The Transportation Security Administration is not saying exactly who x-rayed themselves or when because of privacy reasons, but a source tells 9NEWS the six screeners were working at passenger checkpoints when they decided to x-ray their own bodies.

Like a piece of luggage, the screeners would have rolled down the conveyor belt into the opening, about 2.5 feet high and a foot and a half wide.

"There's enough training, enough education available in the public domain, let alone the circumstances of the TSA, to know this is a foolhardy thing to do," said David Forbes, president of Boydforges, Inc. "The questions that come out of this though are what is the level of supervision?"

Forbes, a security expert, says this highlights a lack of good management and training. But TSA spokesman Mike Fierberg says it was just someone doing something stupid. He insists it did not interfere with security.

TSA would not say if the screeners were still on administrative leave. In fact, it would only confirm that "some kind of action" was taken against one screener at DIA.

As for the screeners' health, the manufacturers of the x-ray equipment say the exposure is actually too low to hurt anyone. They say a chest x-ray at a hospital would be 50 times stronger than an x-ray from an airport system.

AIRPORT TRAVELERS TO GET IONIZING X-RAY RADIATION

Security To Die For How Americans Will Be Nuked To Naked

By Amy Worthington
The Idaho Observer 9-9-3

According to a recent Zogby poll, traveling Americans approve long lines and gridlock at airport passenger screening points. The majority polled appreciate delays and hassles of flying today's suspicious skies and feel safer because the federal Transportation Security Agency (TSA) is in charge of airport screening.¹ These happy line campers should be delighted to learn about TSA's grossly invasive new security plans. The good times have just begun.

TSA Security Laboratory Director Susan Hallowell recently announced the agency's intent to use backscatter X-ray machines for passenger surveillance. These hugely expensive, closet-sized zappers can find the plastic bombs hidden in grandma's underpants, while delivering a smacking dose of ionizing radiation to her breasts and thyroid gland.

Snooper X-rays penetrate a few centimeters into the flesh and reflect off the skin to form a naked body image for TSA security personnel to inspect. These machines are already being field tested at several U.S. airports, including JFK, LAX and Orlando.²

The most lucrative growth industry of our times is the "terror" business. Legions of companies lusting for government contracts are churning out police state technology at a frantic pace. In the last 17

months, TSA has received over 30,000 proposals for Big Brother technology and equipment needed to keep 280 million citizen-suspects under careful surveillance from the inside out.³

Big winners include companies whose equipment is assisting TSA's Advanced Technology Checkpoint Project to nudify airline passengers.⁴ Digital Security Systems of Miami is promoting its ConPass Security Body Scanner, which can perform virtual cavity searches using deeply penetrating X-radiation. Company engineer Thomas Wiggins says the scanner can detect explosives hidden inside bodies or surgically implanted under flabby folds of skin. Wiggins admits that before 9-11, "The thought of using an X-ray system would have been like ordering our own death sentence." Now Wiggins claims that the ConPass scanner "could scan a pregnant woman around 200 times without a health risk."⁵

Virtually all passengers and airline crews who pass through airport screening checkpoints in the U.S. may soon be forced to submit to compulsory, whole-body X-ray exposure. Some fliers could be "fried" several times in one day. Frequent fliers could get hit hundreds of times each year. Pregnant women, infants, the chronically ill and immune suppressed would get the rays. Grateful herds of traveling livestock, prodded by TSA drovers through federally-funded "nuke chutes," are expected to believe Hollowell's scientifically unsupported assertion that ionizing radiation delivered via backscatter will be "about the same as sunshine."⁶

Officials must naturally defend compulsory passenger X-rays as harmless. But they are signing no guarantees because ionizing radiation in the X-ray spectrum damages and mutates both chromosomal DNA and structural proteins in human cells.⁷ If this damage is not repaired, it can lead to cancer.⁸ New research shows that even very low doses of X-ray can delay or prevent cellular repair of damaged DNA, raising questions about the safety of routine medical X-rays.⁹ Unborn babies can become grotesquely disfigured if their mothers are irradiated during pregnancy.¹⁰ Heavily X-rayed persons of childbearing age can sustain chromosomal damage, endangering offspring.¹¹ Radiation damage is cumulative and each successive dose builds upon the cellular mutation caused by the last.¹² It can take years for radiation damage to manifest pathology.

A leading U.S. expert on the biological effects of X-radiation is Dr. John Gofman, Professor Emeritus of Molecular and Cell Biology, University of California, Berkeley. **Dr. Gofman's exhaustive research leads him to conclude that there is NO SAFE DOSE-LEVEL of ionizing radiation.**¹³ **His studies indicate that radiation from medical diagnostics and treatment is a causal co-factor in 50 percent of America's cancers and 60 percent of our ischemic (blood flow blockage) heart disease.**¹⁴ **He stresses that the frequency with which Americans are medically X-rayed "makes for a significant radiological impact."**¹⁵

This highly credentialed nuclear physicist states: "The fact, that X-ray doses are so seldom measured, reflects the false assumption that doses do not matter...[but] they do matter enormously. And each bit of additional dose matters, because any X-ray photon may be the one which sets in motion the high-speed, high energy electron which causes a carcinogenic or atherogenic [smooth muscle] mutation. Such mutations rarely disappear. The higher their accumulated number in a population, the higher will be the population's mortality rates from radiation-induced cancer and ischemic heart disease."¹⁶

A report in the British medical journal Lancet noted that after breast mammograms were introduced in 1983, the incidence of ductal carcinoma (12

percent of breast cancer) increased by 328 percent, of which 200 percent was due to the use of mammography itself.¹⁷ A Lawrence Berkeley National Lab study has demonstrated that breast tissue is extremely susceptible to radiation-induced cancer,¹⁸ confirming warnings by numerous experts that mammograms can initiate the very cancers they may later identify.¹⁹ Dr. Gofman believes that medical radiation is a co-factor in 75 percent of breast cancer cases.²⁰ So why would girls and women want their breast tissues irradiated every time they take a commercial flight?

Cancer is number two cause of death in the U.S. behind heart disease. The more marathon walks and cookie eating contests we sponsor to fund the "war" on cancer, the more cancer we get. "America isn't winning the war on cancer after all," the Wall Street Journal recently reported.²¹ The National Cancer Institute admits that America's cancer rates in almost every category are rising steadily.²² Airline pilots and cabin crews suffer a significant incidence of leukemia, skin and breast cancer due to chromosomal damage from ionizing cosmic radiation encountered during years of flying at high altitudes.²³

Dr. Gofman's research reveals a dose-response relationship between medical X-rays and fatal heart disease, the number one killer of Americans. He found that X-radiation is a powerful atherogen, causing mutations in smooth muscle cells of coronary arteries. These radiation damaged cells are unable to process lipoproteins correctly, resulting in atherosclerotic plaques and mini tumors in the arteries.²⁴ Radiation used to treat breast cancer can badly damage the heart.²⁵

As Dr. Gofman and other experts argue for improved diagnostic techniques and equipment to reduce medically necessary X-ray exposure, TSA gears up to impose frivolous, nonmusical exposure, even though conventional airline security measures have proven adequate since 9/11. To date, the National Institutes of Health, the American Cancer Society and the American Heart Association have been silent about TSA's sinister plan to deliver unlimited doses of carcinogenic, mutagenic, heart damaging radiation to the flying public. No health studies are planned to gauge short and long-term effects of the radiation TSA will deliver to inspect our innards.

Big Brother's zap madness is a predictable result of America's post 9-11 security hysteria. But here's the irony: Dr. Gofman says X- radiation has the effect of "grenades and small bombs" on human cells.²⁶ If we permit TSA to continually "bomb" our DNA in the name of security, what have we accomplished?

Besides ionizing beams, the feds are also testing other types of surveillance radiation. A flubbed holographic scanner developed by Pacific Northwest National Laboratory allows officials to strip search humans with ultra-high frequency radio waves.²⁷ Millivision of Amherst, Mass., has engineered a millimeter wave scanner using radio frequencies 1,000 times higher than those of an FM broadcast.²⁸ These waves pass through clothing, packaging and building materials. Ultra-high radio frequencies include radar, a spectrum of radiation known since WWII to cause cancer and neurological disability in humans.²⁹ Microwave frequencies are documented by recent studies on cell/cordless phone radiation to be carcinogenic and teratogenic (causing abnormal embryonic development).³⁰

ULTRASOUND RESEARCH

An example of unexpected health repercussions caused by high frequency radiation used on humans is fetal ultrasound technology. Ultrasound equipment bombards a fetus for up to one hour with megahertz radiation. This radiation, which cycles millions of time per second, can cause mutation and bleeding in the intestinal cells of rodents.³¹ **Swedish scientists say routine ultrasound scanning of**

pregnant women may be causing subtle brain damage in unborn babies.³² Approximately half of all pregnancies in the U.S. result in prenatal or postnatal death, or an otherwise less than healthy baby.³³ Many wonder if routine exposure of America's fragile unborn to megahertz radiation might be a factor, among others, of this shocking national statistic. Is fetal ultrasound exposure playing some part in the national epidemic of delayed development in infants, plus learning and behavior difficulties suffered by millions of our school children? Exposing the unborn to ionizing X-radiation at airport checkpoints is an even more dangerous game of roulette.

Fedgov's planned use of health damaging radiation on the traveling public seems especially tragic and abusive to those of us convinced that the War on Terror is a giant con job. Massive evidence indicates that the terrorist attacks of 9/11 were intentionally staged to justify increased power over and surveillance of Americans.³⁴ Key NORAD and other military officials had to be in on the ruse.³⁵ President Bush ambushed himself when he openly lied about what he knew and when he knew it on the day the Twin Towers went down.³⁶ He has been caught lying about so many issues that Homeland Security should issue a red alert every time he is about to move his lips. The Bush administration's ongoing cover-up of 9/11 is so blatant that even Bush's own investigatory commission has expressed outrage at his efforts to block its requests for vital information and resources.³⁷

Meantime, TSA claims concern that Americans may feel humiliated at being viewed naked by X-ray screeners. But whatever airport nuke-nazis see through our clothing is nothing that the undertaker won't see after excessive, state-mandated radiation puts us "down" for good. Mandatory airport surveillance radiation delivered to an already grossly ill population would afford our financially strapped government an ingenious "final solution" to numerous political and economic problems. No muss, no fuss, this cull in the Cuckoos' nest. Each useless eater lines up for his deferred-lethal dose. The weak will die soonest, the strong will eventually become the weak--no questions asked and nothing proven. It's hard for a Prozac nation to imagine such sinister motives behind the terror industry, but the documented truth is, our amoral leadership has been brazenly murdering Americans for decades.³⁸ Genocide specialists have been especially fond of unleashing various forms of deadly radiation on the unwitting masses, as documented by the federal Advisory Committee on Human Radiation Experiments.³⁹ Now here we go again!

Consumers could derail TSA's sinister surveillance projects in a heartbeat. It's called boycott: We simply refuse to get nuked to naked. If we stop booking flights, the airline industry must grind to a halt. TSA would have little choice but to scrap its plans to endanger the national health with unnecessary radiation.

Americans who are still able to think must launch an effort to save ourselves and warn others. 1. Let's demand that Congress mandate TSA's radiation experiments be strictly voluntary. 2. We must demand the right to request that TSA conduct a non-radiation search of our persons. 3. We must demand our right to abstain from security procedures that may harm our children. 4. We must initiate an e-mail campaign to convince TSA and the airlines that forcible assault by radiation makes the cost of an airline ticket impossibly prohibitive.

TSA's consumer e-mail address is: TSAContactCenter@dhs.gov. It's toll free comment line is: 1-866-289-9673.

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39. Undue Risk, Secret State Experiments On Humans, Jonathan D. Moreno, W. H Freeman and Co., N.Y., 1999. Moreno was senior staff member of the federally appointed Advisory Committee on Human Radiation Experiments, which completed its research in 1995.

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RADIATION EXPOSURE COMPARISON: BAGGAGE X-RAY VS. IN-FLIGHT EXPOSURE

Source: http://www.hc-sc.gc.ca/ewh-semt/pubs/occup-travail/radiation/dosim/summer_fall_2002_ete_automne_2002_e.html

Question:

"I am an X-ray Safety inspector for the Ontario Ministry of Health and Long-Term Care. I wear a TLD for the course of my duties. Occasionally I travel by air. I have never permitted my TLD to pass through the luggage inspection device but simply handed it to the 'guards' who then manually bypassed the machine and gave it back to me. With the new safety procedures at airports, what should be the proper procedure? I flew late in September and at that time the 'guards' were not happy about the above mentioned procedure, even though I opened the TLD. Does it matter if the TLD is x-rayed in the luggage inspection device? Would that not lead to an erroneous reading on the TLD? Please advise. Thanks." Robert Dixon

Answer:

"Mr. Dixon:

According to information from the Health Canada industrial x-ray group, typical exposures in airport baggage x-ray machines in Canada are 0.3 to 0.6 mR per pass through the device. This would translate to about 0.003 to 0.006 mSv on our dosimeters, more or less depending on the exact spectrum present. The excess dose received due to the elevated cosmic ray levels at flight altitudes for domestic flights are significantly higher than this. For example, the cosmic ray dose on a one way flight from Toronto to Vancouver would be on the order of 0.02 mSv. The dose from the baggage x-ray equipment would be an incremental increase. We also have examples in which clients have reported passing their dosimeters through airport x-ray equipment, and taking them on the plane for multiple domestic flights. In one of the most recent such events, the subject dosimeters showed discernable elevations above background of 0.02 to 0.04 mSv after being taken on two to four flights, including baggage x-ray. These values are well below our reporting threshold of 0.10 mSv, and the lower value is just outside the expected range of variation (99% confidence limits) around a background level reading. For significant occupational doses, such doses would be well within the uncertainty of an individual reading, about 5% of the gross reading at the 95% confidence limits. Therefore, unless the number of flights taken is quite large and the occupational dose only low or moderate, there is unlikely to be a significant impact due to total flight associated dose, let alone the small contribution from baggage x-ray equipment."

Brian R. Gaulke, CHP
Head, Dosimetry Section