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1NC CASE FRONTLINE

Threats of depleted uranium are exaggerated – part of a larger anti-nuclear movement

Bailey '03 [Ronald Bailey, award-winning science correspondent for Reason magazine and Reason.com, where he writes a weekly science and technology column, 3/26/2003, pg. online @ http://reason.com/archives/2003/03/26/nuclear-genocide// gh-bprp]

"The United States has conducted two nuclear wars. The first is against Japan in 1945, the second in Kuwait and Iraq in 1991." So declares activist Helen Caldicott in a half-page ad placed by a Japanese anti-nuclear group in the March 24 New York Times. If you didn't hear about the Persian Gulf Hiroshima, it's because she's actually referring to depleted uranium (DU) munitions. Former U.S. Attorney General Ramsey Clark says that these "are an unacceptable threat to life, a violation of international law and an assault on human dignity." Using them results in a "deterioration of genetic health" and "genocide," declares anti-nuke activist Tim Judson. The Green Party claims that they are "the likely cause of numerous health problems in thousands of Gulf War veterans and their families, including cancer, leukemia, tumors, and high rates of birth defects because of genetic damage." DU is 1.7 times denser than lead, and munitions encased in it are self-sharpening, enabling them to drill 25 percent further through armor. (Armor-piercing tungsten alloy munitions, by contrast, blunt and mushroom when they hit.) This self-sharpening process produces DU dust, most of which falls to the ground within 50 yards of its impact. Such weapons are used most frequently against enemy tanks. DU is also used to clad many U.S. armored vehicles, thus making them largely impenetrable to conventional anti-tank munitions. It is also used for counterweights in airplanes to help keep them level, and as radiation shielding to protect health care workers from exposure to medical X-rays. DU is a by-product—activists would say a waste product—of the process of separating the highly fissionable U-235 isotope out of uranium to produce fuel for nuclear reactors. It is called "depleted" because most of the lighter uranium isotopes, U-234 and U-235, are removed from natural uranium, leaving behind uranium consisting of 99.8 percent of U-238. The result is 40 percent less radioactive than natural uranium. Is it as dangerous as Caldicott and Clark claim? A Department of Defense-sponsored review of the scientific literature by the RAND think tank concluded that "there are no peer reviewed published reports of detectable increases of cancer or other negative health effects from radiation exposure to inhaled or ingested natural uranium at levels far exceeding those likely in the Gulf." One need not be a conspiracy theorist to believe that the Defense Department's analysis and reporting on the substance's health and environmental consequences might be biased. But many independent organizations and scientists find little to worry about either. What happens to DU if someone eats it? According to a European Union study released in 2001, "most of the ingested DU (between 98% and 99.8%, depending on the solubility of the uranium compound) will be rapidly eliminated in the faeces." The vast majority of any remaining uranium will be "rapidly cleared from the blood" in a few weeks. Similarly, the majority of inhaled DU dust will also be cleared via the bloodstream and kidneys. The EU report concluded that "exposure to DU could not produce any detectable health effects under realistic assumptions of the doses that would be received." That said, DU is a heavy metal; and like lead, nickel, and other heavy metals, it is chemically toxic when consumed in large quantities, especially harming the kidneys. However, studies looking at likely exposures to DU during and after battles have found that its effects on the kidneys of soldiers and civilians are mild and transient. Another 2001 report to the European Parliament compared exposures to DU to those experienced by uranium miners and concluded, "The fact that there is no evidence of an association between exposures—sometimes high and lasting since the beginning of the uranium industry—and health damages such as bone cancer, lymphatic or other forms of leukemia shows that these diseases as a consequence of an uranium exposure are either not present or very exceptional." The World Health Organization agrees that DU is not a great health risk. Its 2003 fact sheet on the topic declares that "because DU is only weakly radioactive, very large amounts of dust (on the order of grams) would have to be inhaled for the additional risk of lung cancer to be detectable in an exposed group. Risks for other radiation-induced cancers, including leukaemia, are considered to be very much lower than for lung cancer." Another WHO report found, "The radiological hazard is likely to be very small. No increase of leukemia or other cancers has been established following exposure to uranium or DU." What about those military reports? Dan Fahey, a former naval officer who served in the first Gulf War and is a long-time anti-DU activist, asserts that Defense Department spokespeople "have lied about the health of US Gulf War veterans exposed to DU and exaggerated the importance of DU rounds." What was the alleged lie? The Pentagon has said that no veterans in a small follow-up study of Gulf War soldiers who had been exposed to DU have contracted cancer. Fahey cites a memo that states that one veteran who had been recently added to the study has had lymphatic cancer. Fahey does acknowledge that "it is possible that this veteran's cancer is not linked to his confirmed exposure to DU." Fahey thinks the Pentagon exaggerates the importance of DU munitions and points out that DU rounds probably took out only one-seventh of the Iraqi tanks destroyed during the first Gulf War. But Fahey also admits that there is very little evidence that DU is severely toxic. He also refutes other activists' alarmist claims that civilians have been severely harmed by depleted uranium. "There are no credible studies linking exposure to DU with any cancers or illnesses among people in Iraq, the Balkans, or Afghanistan," he declares. If DU is not notably harmful to human health or the environment, why the fierce opposition to it? A lot of it has to do with conventional anti-nuclear activism: Some people automatically object to anything that hints of nuclear radiation. Second, some of the opposition is the result of a successful Iraqi disinformation campaign claiming that exposure to DU had caused thousands of cancers and birth defects to innocent civilians. When the WHO offered to investigate the claims, Iraqi officials flatly refused the offer. Other than trying to gain international sympathy, Pentagon officials argue that one of the real aims of the Iraqi campaign was to get DU munitions outlawed internationally so they would not have to face them again. In addition, many U.S. veterans who returned from the Gulf War believe that they are suffering from "Gulf War Syndrome," a constellation of disparate medical problems that they think can be traced to their service in that war. One suggested explanation for their problems might be exposure to DU dust. But as we've seen, no credible studies show that exposure to DU is likely to be causing their problems. Finally**,** there is always a claque of activists who simply will pick up any stick with which to beat and demonize the United States. For them, the myth of severe DU toxicity is just another handy stick.

1NC CASE FRONTLINE

**FIRST, YOUR PLAN DOES NOT SOLVE – DEPLETED URANIUM WILL CONTINUE TO BE USED – ALTERNATIVES ARE WORSE**

Hambling 2009 [David Hambling, specialist in Military Technology, “Army Again Turns to Depleted Uranium for New Weaponry”, 12/15/09, <http://www.wired.com/dangerroom/2009/12/army-again-turns-to-depleted-uranium-for-new-weaponry/> adams

For decades, depleted uranium (DU) has been the material of choice for anti-tank projectiles — despite a series of controversies about its potential health hazards. But for the near future, at least, the U.S. military will keep on using DU. Alternatives based on tungsten haven’t panned out. Now, the Army is upgrading to a new 120mm Advanced Kinetic Energy round, and about the only thing we know for sure is that it will be made of DU. The generation after that … may be an improved version of DU called Stakalloy. Kinetic rounds are slim metal darts fired from tanks like the MAA1 Abrams at very high velocity. The preference for DU is not based, as some conspiracy theorists would have it, on a diabolical scheme to dump nuclear waste in developing countries. It’s because in addition to its high hardness and density, it has a property called adiabatic shear banding. Essentially, DU is crumbly rather than squishy. During the process of high-speed penetration through metal armor, fragments flake off a DU projectile. This means that a DU projectile is “self-sharpening” (compared to tungsten, which tends to deform in a blunted, mushroom shape.) It also means that DU produces a pyrophoric effect, filling the vehicle hit with a lethal fireball of tiny burning particles. That too makes it more effective than tungsten. For many years, the Pentagon has been researching alternatives to DU, most notably Darpa’s “Liquidmetal” initiative on amorphous tungsten. This is a “glassy metal” without a crystalline structure which is very hard and shows the right kind of behavior under extreme stress. However, there still appear to be difficulties with producing large amorphous-tungsten penetrators. Darpa wasn’t able to comment on the current state of the amorphous-tungsten research effort. However, Peter Rowland, spokesman for the Army’s Armament Research, Development and Engineering Center (ARDEC) was able to give a categorical statement: Tungsten still plays second fiddle to depleted uranium. “At present, there is no tungsten alloy or other material that provides armor penetration performance as good as DU,” he told Danger Room. “For some time, there have been efforts to continually improve the performance of tungsten alloys, in an effort to achieve performance comparable with DU. Thus far, DU remains superior.” This is why the requirement for the new Advanced Kinetic Energy round specifies that it must be made of DU.

It should also be mentioned that the idea of tungsten being introduced as a “clean” alternative to “dirty” DU took something of a knock when it was found that military-grade tungsten alloy is highly carcinogenic in rats. A 2007 Department of Defense memo advised considering alternative materials to tungsten in munitions developments. Pure tungsten is not carcinogenic, and amorphous tungsten would be very different to existing applications, but this might be a difficult one to sell to the media. Meanwhile, research continues into improving the performance of depleted uranium penetrators.

No impact—current research shows no long-term effects of radiation

BBC News 03 [Alex Kirby, BBC News Online environment correspondent, 4/14/03, *US rejects Iraq DU clean-up*, <http://news.bbc.co.uk/2/hi/science/nature/2946715.stm>] tanner

The US says it has no plans to remove the debris left over from depleted uranium (DU) weapons it is using in Iraq.

It says no clean-up is needed, because research shows DU has no long-term effects**.** It says a 1990 study suggesting health risks to local people and veterans is out of date.

A United Nations study found DU contaminating air and water seven years after it was used.

DU, left over after natural uranium has been enriched, is 1.7 times denser than lead, and very effective for punching through armoured vehicles.

When a weapon with a DU tip or core strikes a solid object, like the side of a tank, it goes straight through before erupting in a burning cloud of vapour. This settles as chemically poisonous and radioactive dust.

Risk studies

Both the US and the UK acknowledge the dust can be dangerous if inhaled, though they say the danger is short-lived, localised, and much more likely to lead to chemical poisoning than to irradiation.

But a study prepared for the US Army in July 1990, a month before Iraq invaded Kuwait, says: "The health risks associated with internal and external DU exposure during combat conditions are certainly far less than other combat-related risks.

"Following combat, however, the condition of the battlefield and the long-term health risks to natives and combat veterans may become issues in the acceptability of the continued use of DU."

A Pentagon spokesman, Lieutenant-Colonel David Lapan, told BBC News Online: "Since then there've been a number of studies - by the UK's Royal Society and the World Health Organisation, for example - into the health risks of DU, or the lack of them.

"It's fair to say the 1990 study has been overtaken by them. One thing we've found in these various studies is that there are no long-term effects from DU.

"And given that, I don't believe we have any plans for a DU clean-up in Iraq."

Part of the armoury

The UN Environment Programme study, published in March 2003, found DU in air and groundwater in Bosnia-Herzegovina seven years after the weapons were fired.

The UN says the existing data suggest it is "highly unlikely" DU could be linked to any of the health problems reported.

1NC CASE FRONTLINE

**AND, EXPOSURE TO DU DOES NOT LEAD TO CANCER**

Blanchfield 01 [Mike, an Ottawa Citizen reporter who works in the Southam News Parliamentary bureau, 1/17/01, *NATO doctors claim no link between cancer, ammunition*, Lexis] tanner

NATO doctors say no link can be found between a mysterious cancer-related "Balkan syndrome" and the use of radioactive ammunition containing depleted uranium.

NATO's top medical advisers issued that conclusion yesterday after growing controversy throughout the alliance's European countries. Unexplained leukemia-related deaths of more than a dozen peacekeepers from Italy, Belgium, Spain and the Netherlands have fueled concern in the past two weeks. Fear has grown that debris from depleted-uranium ammunition dropped by tank-killer bombers during the 1999 Kosovo campaign, as well as the 1994-95 bombing of Bosnia and the 1991 Persian Gulf War, may pose a serious health hazard.

"We cannot identify any increase in disease or mortality in soldiers who have deployed to the Balkans as compared to those soldiers who have not been deployed," Maj.-Gen. Roger Van Hoof, chairman of NATO's senior medical advisory committee, told a press conference at its Brussels headquarters.

"Available peer-reviewed medical scientific studies show no links between natural uranium or depleted uranium exposure and cancer," he said.

However, Van Hoof said the alliance should begin a timely investigation to find the reasons behind the unexplained illnesses and cancer.

Based on the latest scientific literature, the danger posed by depleted uranium increases with the amount handled, "and so far there is no evidence of exposure beyond safe levels," Van Hoof said.

"There are a number of military personnel reporting symptoms," he said. "While these symptoms are not \linked to depleted uranium exposure, these should warrant further peer review scientific studies."

Col. David Lam, a U.S. army medical expert, told reporters that the controversy over depleted uranium has been driven "more by political and emotional aspects than by scientific ones." He urged critics to consider other possible pollutants "and not focus only on DU" when trying to find out what may be making Balkan peacekeepers sick.

Lam said people can be exposed to more radiation by smoking two cigarettes a day or having bowel X-rays than by handling depleted-uranium rounds for an hour.

CASE EXTS – NO HARMFUL RADIATION

UN STUDIES PROVE THAT NO HARMFUL DOSES OF RADIATION FROM IRAQ DUBs

IAEA June 2010 [IAEA“RADIOLOGICAL CONDITIONS IN SELECTED AREAS OF SOUTHERN IRAQ WITH RESIDUES OF DEPLETED URANIUM,” <http://www-pub.iaea.org/MTCD/publications/PDF/Pub1434_web.pdf> ] anshuman

During the conflict in Iraq in 2003, depleted uranium (DU) munitions were employed by the Coalition Forces. As a result, residues of DU contaminated both localized areas of land and vehicles. The possible health effects of such residues on the Iraqi population living in the vicinity of the affected areas raised concerns in Iraq as well as in other parts of the world. The United Nations Environment Programme (UNEP), after receiving a formal request from the Iraqi Minister of Environment, HE Mishkat Moumin, for a comprehensive field assessment to investigate the use of DU and its residual impacts, decided to train and equip national experts from the Radiation Protection Centre (RPC) of the Iraqi Ministry of Environment to undertake a sampling campaign for DU in Iraq. The IAEA was subsequently invited to become involved; its specific role was to undertake a radiological assessment of the results obtained through the sampling campaign. RPC staff collected environmental samples at selected sites in southern Iraq during sampling campaigns conducted in 2006–2007*.* A total of 520 samples of soil, water, vegetation and smear samples were taken. The samples were collected at four locations in southern Iraq, namely, As Samawah, An Nasiriyah, Al Basrah and Az Zubayr. The samples were then shipped from Iraq to UNEP in Geneva, Switzerland, and analysed by the Spiez Laboratory in Switzerland. In the subsequent radiation dose assessment performed by the IAEA, the following exposure pathways were considered: (1) Inhalation of DU contaminated soil resuspended by the action of wind or human activities; (2) Inhalation of resuspended DU dust inside military vehicles hit by DU munitions; (3) Ingestion of DU contaminated soil; (4) Ingestion of DU contaminated vegetables and drinking water; (5) Direct contact with DU penetrators or DU fragments; (6) Ingestion of DU contaminated dust from flat surfaces (metal, concrete, walls);(7)Inhalation and ingestion of DU during operations at scrap metal facilities involving military vehicles hit by DU munitions. On the basis of assumptions on the habits of local residents, which were corroborated by the experts from the Iraqi RPC, and the results of measurements of environmental samples, the estimation of the radiological risk from DU was performed in a very conservative way. Assumptions concerning human habits and exposure scenarios were made such that radiation doses at the upper end of the possible range would result. From the data provided by the RPC/Spiez Laboratory, those data showing the highest DU contamination levels were mainly used. In this report, it is concluded that the radiation doses from DU do not pose a radiological hazard to the population at the four studied locations in southern Iraq. The estimated annual committed effective radiation doses that could arise from exposure to DU residues are low, always less than 100 μSv/a and only to a few, if any, individuals, and therefore of little radiological concern. The estimated radiation doses are less than those received on average by individuals from natural sources of radiation in the environment (worldwide average 2.4 mSv/a), below internationally recommended dose limits for members of the public (1 mSv/a) and below the action level of 10 mSv/a set out in the IAEA Safety Standard on Remediation of Areas Contaminated by Past Activities and Accidents [1] to establish whether remedial actions are necessary. The conclusions concerning the radiological impact are relevant to the locations investigated and cannot be directly extrapolated to other locations in Iraq where DU ammunition was used. However, it is likely that the general picture is not very different at other locations in Iraq where DU was used in the 2003 conflict. The conclusions reached in international studies of other situations where DU munitions were employed (Kuwait and the Balkans) were similar to those of this report and support the belief that the radiological impact of the residues from the firing of DU munitions is also likely to be low in other parts of Iraq.

CASE EXTS – NO HARMFUL RADIATION

DEPLETED URANIUM IS NOT A THREAT

WHO 10 [World Health Organization, “Depleted Uranium”, 2010, <http://www.who.int/mediacentre/factsheets/fs257/en/>] denno

Under most circumstances, use of DU will make a negligible contribution to the overall natural background levels of uranium in the environment. Probably the greatest potential for DU exposure will follow conflict where DU munitions are used. A recent United Nations Environment Programme (UNEP) report giving field measurements taken around selected impact sites in Kosovo (Federal Republic of Yugoslavia) indicates that contamination by DU in the environment was localized to a few tens of metres around impact sites. Contamination by DU dusts of local vegetation and water supplies was found to be extremely low. Thus, the probability of significant exposure to local populations was considered to be very low. A UN expert team reported in November 2002 that they found traces of DU in three locations among 14 sites investigated in Bosnia following NATO airstrikes in 1995. A full report is expected to be published by UNEP in March 2003 Levels of DU may exceed background levels of uranium close to DU contaminating events. Over the days and years following such an event, the contamination normally becomes dispersed into the wider natural environment by wind and rain. People living or working in affected areas may inhale contaminated dusts or consume contaminated food and drinking water. People near an aircraft crash may be exposed to DU dusts if counterweights are exposed to prolonged intense heat. Significant exposure would be rare, as large masses of DU counterweights are unlikely to ignite and would oxidize only slowly. Exposures of clean-up and emergency workers to DU following aircraft accidents are possible, but normal occupational protection measures would prevent any significant exposure. About 98% of uranium entering the body via ingestion is not absorbed, but is eliminated via the faeces. Typical gut absorption rates for uranium in food and water are about 2% for soluble and about 0.2% for insoluble uranium compounds. The fraction of uranium absorbed into the blood is generally greater following inhalation than following ingestion of the same chemical form. The fraction will also depend on the particle size distribution. For some soluble forms, more than 20% of the inhaled material could be absorbed into blood. Of the uranium that is absorbed into the blood, approximately 70% will be filtered by the kidney and excreted in the urine within 24 hours; this amount increases to 90% within a few days.

CASE EXTS – NO LINK TO CANCER

NO LINK BETWEEN DU AND ILLNESS-DU IS PLAYED UP FOR POILITICAL PURPOSES

**Ottawa Citizen 01** [Mike Blanchfield, Staff Writer, “NATO can’t link illness to weapons”, Jan 2001., <http://www.lexisnexis.com.turing.library.northwestern.edu/hottopics/lnacademic/>] denno

NATO doctors said yesterday no link can be found between a mysterious cancer-related "Balkan Syndrome" and the use of radioactive ammunition containing depleted uranium. NATO's top medical advisers issued that conclusion after growing controversy in the alliance's European countries. Unexplained leukemia-related deaths of more than a dozen peacekeepers from Italy, Belgium, Spain and the Netherlands have fuelled concern in the past two weeks. Fear has grown that debris fromdepleted uranium ammunition dropped by tank-killer bombers during the 1999 Kosovo campaign, as well as the 1994-95 bombing of Bosnia and the 1991 Persian Gulf War, may pose a serious health hazard. "We cannot identify any increase in disease or mortality in soldiers who have deployed to the Balkans as compared to those soldiers who have not been deployed," Maj.-Gen. Roger Van Hoof, chairman of NATO's senior medical advisory committee, told a news conference at its Brussels headquarters. "Available peer-reviewed medical scientific studies show no links between natural uranium or depleted uranium exposure and cancer." However, Maj.-Gen. Van Hoof said the alliance should begin a timely investigation to find the reasons behind the unexplained illnesses and cancer. Based on the latest scientific literature, the danger posed by depleted uranium increases with the amount handled, "and so far there is no evidence of exposure beyond safe levels," said Maj.-Gen. Van Hoof. "There are a number of military personnel reporting symptoms," he said. "While these symptoms are not linked to depleted uranium exposure, these should warrant further peer review scientific studies." Col. David Lam, a U.S. army medical expert, told reporters the controversy over depleted uraniumhas been driven "more by political and emotional aspects than by scientific ones." He urged critics to consider other possible pollutants "and not focus only on depleted uranium" when trying to find out what may be making Balkan peacekeepers sick. Depleted uranium, which is almost twice as dense as lead, has become the munition of choice for piercing heavy armour. Col. Lam said people can be exposed to more radiation by smoking two cigarettes a day or having bowel X-rays than by handling depleted uranium rounds for an hour. Spain also said yesterday that it doesn't believe depleted uranium is responsible for the cancer deaths of three of its peacekeepers. "The soldiers who are ill do not show the same symptoms," Spanish Defence Minister Federico Trillo told his country's parliament, adding that no traces of depleted uranium could be found in the blood or urine of 3,200 Spanish soldiers recently tested. Despite NATO's efforts to play down the depleted uranium hazard, the United Nations Environment Program continues its study of the effects of depleted uranium munitions dropped on Kosovo and is to report in March. The UN agency said yesterday it found traces of Uranium 236 in pieces of seven NATO bombs, but that laboratory analysis had yet to determine whether the level was harmful. Also yesterday, the World Health Organization announced it would send its own team of investigators to Kosovo to study the effects of depleted uranium. The issue exploded two weeks ago when Italy's prime minister sounded the alarm that depleted uranium might be behind the leukemia deaths of seven of its young and otherwise healthy soldiers who had been stationed in the Balkans. NATO pledged yesterday that its 19 member countries would analyse cancer incidence to see whether there was any noticeable difference between the accepted rates in the civilian populations and soldiers sent to the Balkans. It also pledged to set up a working group to develop standard procedures to address other possible health hazards facing its soldiers. "Within NATO, in the past, the military medical support was a pure national responsibility," said Maj.-Gen. Van Hoof. Canada, so far, says its soldiers do not exhibit a higher rate of cancer than the regular population. The Canadian Forces have found no problems after testing 104 troops for exposure to radiation. But the vast majority of those served in the Persian Gulf, not the Balkans. Canada stopped using depleted uranium in 1998 because it was too expensive and too much trouble to store, said Lieut. Yves Vanier, a Canadian Forces spokesman. "Depleted uranium, for storage purposes, is considered a low radioactive material," Lieut. Vanier said yesterday. "So, as far as where you keep your rounds, there are some guidelines you have to follow." The depleted uranium was used as ammunition in anti-missile guns aboard Canadian frigates, he said. A cheaper, non-radioactive tungsten projectile is now used, he added. NATO planes dropped about 31,000 depleted uranium weapons during the 1999 78-day Kosovo bombing campaign. However, Canadian CF-18s, which flew about one-10th of the sorties, were not armed with depleted uranium, said Lieut. Vanier. Canada sent the remainder of its depleted uranium munitions to the United States last year for disposal, he added. Canada also banned the use of depleted uranium shells on its firing ranges in 1998. Canadian allies, which train here, are also forbidden from using it, Lieut. Vanier said. For the most part, depleted uranium munitions were used by American A-10 tank-killer bombers during the 1999 bombing campaign, which was launched to end Yugoslav persecution of ethnic Albanians in Kosovo. Yugoslav President Vojislav Kostunica criticized NATO yesterday for using the ammunition. "We should be discussing the depleted conscience of those who used the notorious depleted uranium," he said while visiting Greece.

CASE EXTS – NO LINK TO CANCER

ILLNESSES NOT CAUSED BY DU MUNITIONS

**National Post 02** [Adrian Humphreys, Staff Writer, “Soldiers’ Illness not Caused by Uranium”, Apr 2002., <http://www.lexisnexis.com.turing.library.northwestern.edu/hottopics/lnacademic/>] denno

A scientific study of Canadian Forces soldiers who served in the Gulf War and Kosovo has found normal levels of uranium in their bodies, casting doubt on claims that they faced toxic exposure to radiation from armour-piercing bullets. An analysis of urine and hair samples from soldiers and, in one case, a piece of skeleton from a dead veteran, found no elevated levels of depleted uranium, according to a study published this week in the American academic journal Health Physics. Many soldiers who served in campaigns oversees, some of whom are now ailing or have since died, have pointed to the use of depleted uranium in ammunition and armour plating as the likely culprit for health problems. While the Department of National Defence has long dismissed a connection between mysterious ailments of Canadian soldiers and the use of depleted uranium, this is believed to be the first study of the issue to appear in an academic, peer-reviewed journal. That means the study's sampling methods and handling of the data were accepted as sound by a panel of independent scientists. "There are a lot of numbers that are floating around out there that the media picks up on or people quote. What we wanted to do was make sure that we quantify it and put it into writing," said Dr. Brent Lewis, an analytical chemist at the Royal Military College in Kingston, an author of the study. "The numbers we are getting [for the soldiers] are comparable to what we should see in the general population," he said. The scientists analyzed urine from 103 Canadian Forces personnel who volunteered to provide two samples; 79 had served during the Gulf War and 39 had been stationed in the Balkans -- with 15 of the subjects having served in both. The levels of uranium found in the samples was extremely low, so low in fact that separating naturally occurring uranium -- found in everyone because it is in water and soil -- from depleteduranium could barely be done, according to the paper. The scientists then turned to hair samples, which allow a better measure. Only 19 soldiers provided hair samples, which were found to have no unusual levels of depleted uranium, the paper says. The bone sample, provided by the family of a soldier who died when he was 27 after serving overseas, was also studied. That sample had higher than normal levels of naturally occurring uranium but showed no sign of exposure to depleted uranium. The study was funded by the defence department and conducted by professors at the Royal Military College in Kingston, a university operated by the federal government. Dr. Lewis said that should not make the findings suspect. "Nobody gave us any marching orders about we had to find," he said. Depleted uranium is a mildly radioactive by-product left after highly radioactive isotopes are extracted for use in nuclear weapons or reactors. The high density of the depleted uranium gives bullets added punch -- allowing for the penetration of tanks or other armoured vehicles -- and enhances the strength of armour plating. Critics say the depleted uranium in the bullets, when crashing into a target, is pulverized into dust that, when inhaled, can cause a variety of illnesses.The military has produced several past studies, including a health survey distributed in 1997 to thousands of Canadian Forces personnel, that showed no unusual rates of illnesses such as cancer.

NO LINK BETWEEN DU AND CANCER – KOSOVO AND BOSNIA PROVE

NATO 05 [3/17/05, *Depleted Uranium*, <http://www.nato.int/du/home.htm>] tanner

In January 2001, news media in many parts of the world carried reports that postulated links between NATO's use of Depleted Uranium ammunition in Kosovo and Bosnia with allegedly higher incidences of leukemia, other cancers, and other negative health effects said to be occuring among NATO troops who had served in those areas and among local civilian populations.

Although a very large body of existing scientific and medical research clearly established that such a link between Depleted Uranium ammunition and the reported illnesses was extremely unlikely, NATO Secretary General George Robertson immediately established an Ad Hoc Committee on Depleted Uranium to serve as a clearing house for information to be shared among interested nations.

To date, the scientific and medical research continues to disprove any link between Depleted Uranium and the reported negative health effects. Furthermore, the present evidence strongly suggests that NATO troops serving in the Balkans are not suffering negative health effects different from those suffered by their colleagues who have not served in the Balkans. Nevertheless, NATO is not complacent about this matter, and will continue to share information about this issue. The following web pages, which contain a large volume of material on this subject, represent part of NATO's effort in this regard.

CASE EXTS – NO LINK TO CANCER

**CANCER THREATS ARE UNLIKELY-LOW RISK OF YOUR IMPACTS  
Agency for Toxic Substances and Disease Registry 99** [“Public Health Statement for Uranium”, Sept. 1999, <http://www.atsdr.cdc.gov/toxprofiles/phs150.html>] denno

Uranium is a chemical substance that is also radioactive. Scientists have never detected harmful radiation effects from low levels of natural uranium, although some may be possible. However, scientists have seen chemical effects. A few people have developed signs of kidney disease after intake of large amounts of uranium. Animals have also developed kidney disease after they have been treated with large amounts of uranium, so it is possible that intake of a large amount of uranium might damage your kidneys. There is also a chance of getting cancer from any radio active material like uranium. Natural and depleted uranium are only weakly radioactive and are not likely to cause you to get cancer from their radiation. No human cancer of any type has ever been seen as a result of exposure to natural or depleted uranium. Uranium can decay into other radionuclides, which can cause cancer if you are exposed to enough of them for a long enough period. Doctors that studied lung and other cancers in uranium miners did not think that uranium radiation caused these cancers. The miners smoked cigarettes and were exposed to other substances that we know cause cancer, and the observed lung cancers were attributed to large exposures to radon and its radioactive transformation products

1NC FRAMEWORK

**Utilitarian calculus is the most common and effective way to make decisions – especially in public policy**

Russo '93 [Michael S. Russu, department of philosophy at molloy college, 1993, "Utilitarianism in a Nutshell", pg. online @ http://www.molloy.edu/sophia/ethics/utilitarianism.htm// gh-bprp]

Utilitarianism is one of the most important consequentialist approaches to ethics. A consequentialist approach is one which argues that human beings ought to act in a way that brings about the best possible results from their actions. According to this approach, then, it really doesn’t matter what kind of acts we perform or what our intentions are when performing them, as long as the effects of our acts are generally positive. If such an approach makes sense intuitively it is because most of us are taught to be good consequentialists growing up. When a child’s parents shout at him, "did you ever stop to think how your actions effected anyone else?" these parents are in fact adopting a consequentialist approach to their children’s behavior. Our public policy in the United States also tends for the most part to be consequentialist. Whether we are talking about decriminalizing drug use or reducing welfare benefits, the common question that elected officials will raise is "what will the effects of this policy be on the average citizen?" The two major forms consequentialist theory takes are ethical egoism and utilitarianism. Although both of these forms look to the positive consequences of an act to determine whether it is right, they differ with respect to who ought to benefit from these positive consequences. An ethical egoist would argue that one ought to work to promote one’s own good, while a utilitarian would maintain that one ought to work for the good of all who are affected by an act. Although there are many different utilitarian approaches, all of them are based upon the writings of Jeremy Bentham (1748-1832) and John Stuart Mill (1806-1873), who can properly be called the founding fathers of the utilitarian movement. What all utilitarians have in common is that they accept one and only one principle of morality, the principle of utility, which states that in all our actions we must always strive to produce the greatest possible balance of good over evil. In other words, a utilitarian would hold that if have a choice between different courses of action, we should always aim at choosing the one that has the best overall consequences for all those who might be affected by our actions. To determine whether the outcomes of our actions are indeed going to produce the maximum balance of good over evil for all who are involved, a utilitarian would say that we need to engage in what is know as a "utilitarian calculus." We begin by weighing the positive and negative consequences of an action. If the act produces a greater amount of good than evil for all those who are affected by the act, then the act is good; if not, the act is bad. For example, Mildred Schlossberg, a high school senior, is trying to decide whether or not she should lie about the fact that she is currently dating her friend’s former boyfriend. Weighing the positive and negative consequences of the act, Mildred realizes that, on the one hand, if she tells her friend the truth it might cause her pain, since she still has feelings for her former flame; telling the truth might also cause her friend to feel that Mildred has betrayed her, thus putting their relationship into jeopardy. On the other hand, Mildred realizes that if she attempts to deceive her friend about the relationship, she is almost certain to find out anyway; she also believes that a relationship starting under such dubious conditions might not last very long; finally, she thinks that it would be horrible to have to sneak around all the time in order to prevent her friend from finding out what is going on. Weighing the consequences of each possible course of action, she decides that the greatest good will ultimately be achieved by telling her friend the truth about the relationship. Many people engage in this type of utilitarian calculus automatically when they are contemplating important decisions in life. Every time we weigh the pros and cons of a certain action, we are essentially engaged in a type of utilitarian calculus. There are two major forms that utilitarianism usually takes. Act Utilitarianism maintains that for each individual act we are about to perform, we need to appeal directly to the principle of utility. In each instance we must ask ourselves whether this specific act in this circumstance will produce the greatest amount of good over evil. But what about moral rules that are commonly accepted, such as "don’t lie." Can’t rules like these be used as a guide for one’s actions? According to John Stuart Mill, such rules, while in general appropriate to follow, cannot be used as an absolute guide in moral decision making. There are many instances when lying, in fact, may be perfectly acceptable— for example, when telling the truth will subject an innocent to a greater evil. The individual who lies to thugs about where their victim is hiding is also probably behaving properly even though he is forced to resort to a deception. Mill’s point is that while relying on moral rules may be helpful at times, when following those rules causes more harm than good, we should not hesitate to discard them.

1NC FRAMEWORK

The possibility of existential risks is very high- We should weigh risks under the assumption of extinction- any impact that is not an existential disaster is okay

Bostrom 02 (Director of Future of Humanitary Institute at Oxford University, Professor of applied ethics, Co-founded Institute of Ethics and Emerging Technologies, Consultant on the President’s Council on Bioethics) Nick Bostrom March 2002 “Existential Risks- Analyzing Human Extinction and Related Hazards” Journal of Evolution and Technology, <http://www.nickbostrom.com/existential/risks.html>] fri

Previous sections have argued that the combined probability of the existential risks is very substantial. Although there is still a fairly broad range of differing estimates that responsible thinkers could make, it is nonetheless arguable that because the negative utility of an existential disaster is so enormous, the objective of reducing existential risks should be a dominant consideration when acting out of concern for humankind as a whole. It may be useful to adopt the following rule of thumb for moral action; we can call it *Maxipok*: *Maximize the probability of an okay outcome*, where an “okay outcome” is any outcome that avoids existential disaster. At best, this is a rule of thumb, a prima facie suggestion, rather than a principle of absolute validity, since there clearly *are* other moral objectives than preventing terminal global disaster. Its usefulness consists in helping us to get our priorities straight. Moral action is always at risk to diffuse its efficacy on feel-good projects[[24]](http://www.nickbostrom.com/existential/risks.html#_ftn24) rather on serious work that has the best chance of fixing the worst ills. The cleft between the feel-good projects and what really has the greatest potential for good is likely to be especially great in regard to existential risk. Since the goal is somewhat abstract and since existential risks don’t currently cause suffering in any living creature[[25]](http://www.nickbostrom.com/existential/risks.html#_ftn25), there is less of a feel-good dividend to be derived from efforts that seek to reduce them. This suggests an offshoot moral project, namely to reshape the popular moral perception so as to give more credit and social approbation to those who devote their time and resources to benefiting humankind via global safety compared to other philanthropies. Maxipok, a kind of satisficing rule, is different from *Maximin* (“Choose the action that has the best worst-case outcome.”)[[26]](http://www.nickbostrom.com/existential/risks.html#_ftn26). Since we cannot completely eliminate existential risks (at any moment we could be sent into the dustbin of cosmic history by the advancing front of a vacuum phase transition triggered in a remote galaxy a billion years ago) using maximin in the present context has the consequence that we should choose the act that has the greatest benefits under the assumption of impending extinction. In other words, maximin implies that we should all start partying as if there were no tomorrow. While that option is indisputably attractive, it seems best to acknowledge that there just might be a tomorrow, especially if we play our cards right.

And, Nuclear war must be weighed before moral obligations- future generations deserve the right to a livable planet with political institutions

Rendall 07 (Lecturer in Politics and International Relations at the University of Nottingham, PhD is political science from Columbia) Matthew Rendall, Summer 2007 “Nuclear Weapons and Integenerational exploitation” Security Studies Page 16

We can also appeal to theories of rights. 50 Future generations deserve as good opportunities as we have had, and this includes the right to a livable planet. 51 It also means the right to inherit what past generations have built up. It is true that past people were under no obligation to write Crime and Punishment or build the Library of Congress, and in that sense we have no right to inherit them. 52 But since they did create those goods, future generations have the same right to enjoy them as we did. In one sense, I do not deserve to inherit a family fortune that I have not lifted a finger to earn. Still, if my father hocks the family heirlooms and squanders the money on champagne and caviar, he wrongs me as well as our ancestors. 53 Likewise, we hold the planet in trust for future generations as well as our own. 54 Critics will object that mere existence is not the only thing worth handing down. Nuclear deterrence may protect other parts of the human heritage, such as free political institutions. “If we have benefited from ‘life, liberty, and the pursuit of happiness,’” Nye asks, “why should we assume that the next generation would want only life?” After all, we take a risk every time we get into a car. 55 But this confuses threats to individuals with threats to the environment. If I expect to live another fifty years, risking a car accident is a reasonable cost-benefit calculation. If the greenhouse effect threatens the future of life on earth, the calculus of driving becomes very different. So too with nuclear weapons. However desirable it may be to preserve the better aspects of our civilization for future generations, this pales against the obligation to preserve the natural world and favorable conditions for life on it, because they can last for so much longer. “If we do not soon destroy ourselves, but instead survive for a typical lifetime of a successful species,” note Carl Sagan and Richard Turco, “there will be humans for another 10 million years or so. Assuming that our lifespan and numbers do not much grow over that period, the cumulative human population—all of us who have ever lived—would then reach the startling total of about a quadrillion (a 1 followed by 15 zeros).” 56 And this is only one species. Vertebrate animals have been around for some half a billion years; human beings for tens of thousands; sedentary civilizations for a few millennia, and the ideals of the Founding Fathers for about three centuries.

1NC FRAMEWORK

**AND, our disadvantage will turn your aff - Radioactive genocide caused by a nuclear war outweighs the radioactive risk of DUB’s**

U.S. Arms Control '75 [U.S. Arms Controls and Disarmament Agency, 1975, pg. online @ http://www.atomicarchive.com/Docs/Effects/wenw\_index.shtml// gh-bprp]

Three types of radiation damage may occur: bodily damage (mainly leukemia and cancers of the thyroid, lung, breast, bone, and gastrointestinal tract); genetic damage (birth defects and constitutional and degenerative diseases due to gonodal damage suffered by parents); and development and growth damage (primarily growth and mental retardation of unborn infants and young children). Since heavy radiation doses of about 20 roentgen or more (see "Radioactivity" note) are necessary to produce developmental defects, these effects would probably be confined to areas of heavy local fallout in the nuclear combatant nations and would not become a global problem. A. Local Fallout Most of the radiation hazard from nuclear bursts comes from short-lived radionuclides external to the body; these are generally confined to the locality downwind of the weapon burst point. This radiation hazard comes from radioactive fission fragments with half-lives of seconds to a few months, and from soil and other materials in the vicinity of the burst made radioactive by the intense neutron flux of the fission and fusion reactions. It has been estimated that a weapon with a fission yield of 1 million tons TNT equivalent power (1 megaton) exploded at ground level in a 15 miles-per-hour wind would produce fallout in an ellipse extending hundreds of miles downwind from the burst point. At a distance of 20-25 miles downwind, a lethal radiation dose (600 rads) would be accumulated by a person who did not find shelter within 25 minutes after the time the fallout began. At a distance of 40-45 miles, a person would have at most 3 hours after the fallout began to find shelter. Considerably smaller radiation doses will make people seriously ill. Thus, the survival prospects of persons immediately downwind of the burst point would be slim unless they could be sheltered or evacuated. It has been estimated that an attack on U.S. population centers by 100 weapons of one-megaton fission yield would kill up to 20 percent of the population immediately through blast, heat, ground shock and instant radiation effects (neutrons and gamma rays); an attack with 1,000 such weapons would destroy immediately almost half the U.S. population. These figures do not include additional deaths from fires, lack of medical attention, starvation, or the lethal fallout showering to the ground downwind of the burst points of the weapons. Most of the bomb-produced radionuclides decay rapidly. Even so, beyond the blast radius of the exploding weapons there would be areas ("hot spots") the survivors could not enter because of radioactive contamination from long-lived radioactive isotopes like strontium-90 or cesium-137, which can be concentrated through the food chain and incorporated into the body. The damage caused would be internal, with the injurious effects appearing over many years. For the survivors of a nuclear war, this lingering radiation hazard could represent a grave threat for as long as 1 to 5 years after the attack**.** B. Worldwide Effects of Fallout Much of our knowledge of the production and distribution of radionuclides has been derived from the period of intensive nuclear testing in the atmosphere during the 1950's and early 1960's. It is estimated that more than 500 megatons of nuclear yield were detonated in the atmosphere between 1945 and 1971, about half of this yield being produced by a fission reaction. The peak occurred in 1961-62, when a total of 340 megatons were detonated in the atmosphere by the United States and Soviet Union. The limited nuclear test ban treaty of 1963 ended atmospheric testing for the United States, Britain, and the Soviet Union, but two major non-signatories, France and China, continued nuclear testing at the rate of about 5 megatons annually. (France now conducts its nuclear tests underground.) A U.N. scientific committee has estimated that the cumulative per capita dose to the world's population up to the year 2000 as a result of atmospheric testing through 1970 (cutoff date of the study) will be the equivalent of 2 years' exposure to natural background radiation on the earth's surface. For the bulk of the world's population, internal and external radiation doses of natural origin amount to less than one-tenth rad annually. Thus nuclear testing to date does not appear to pose a severe radiation threat in global terms. But a nuclear war releasing 10 or 100 times the total yield of all previous weapons tests could pose a far greater worldwide threat. The biological effects of all forms of ionizing radiation have been calculated within broad ranges by the National Academy of Sciences. Based on these calculations, fallout from the 500-plus megatons of nuclear testing through 1970 will produce between 2 and 25 cases of genetic disease per million live births in the next generation. This means that between 3 and 50 persons per billion births in the post-testing generation will have genetic damage for each megaton of nuclear yield exploded. With similar uncertainty, it is possible to estimate that the induction of cancers would range from 75 to 300 cases per megaton for each billion people in the post-test generation. If we apply these very rough yardsticks to a large-scale nuclear war in which 10,000 megatons of nuclear force are detonated, the effects on a world population of 5 billion appear enormous. Allowing for uncertainties about the dynamics of a possible nuclear war, radiation-induced cancers and genetic damage together over 30 years are estimated to range from 1.5 to 30 million for the world population as a whole. This would mean one additional case for every 100 to 3,000 people or about 1/2 percent to 15 percent of the estimated peacetime cancer death rate in developed countries. As will be seen, moreover, there could be other, less well understood effects which would drastically increase suffering and death.

FRAMEWORK EXTS – FUTURE GENERATIONS

We must take into account the rights of humanity as a whole-Moral Obligations should not affect future generations right to an intact planet

Rendall 07 (Lecturer in Politics and International Relations at the University of Nottingham, PhD is political science from Columbia) Matthew Rendall, Summer 2007 “Nuclear Weapons and Integenerational exploitation” Security Studies Page 20) FRI

No. If we define intergenerational justice as rules, chosen from behind a veil of ignorance, that we would want all previous generations to have followed, this gets us around the non-identity problem. If we did not know whether we would be born in 1960, 2400 or 2800, it would be reasonable to reject nuclear deterrence, because the chance of being born after a nuclear war would be high. Since it is only our generation—whichever it may be—that chooses, we do not have to worry about the identity of future generations. 64 Nor does the non-identity problem mean that we cannot violate the rights of future generations as a group. People often hold rights by virtue of roles, not identities. Students have the right to be taught and professors the obligation to teach them regardless of which students and professors they are. 65 Similarly, future generations will have the right to inherit an intact planet. “[S]ince the rights of future generations exist only as generational rights, it does not matter who the individuals are or how many they may be. Only at the point where the individuals are born...do the generational rights attach to individuals.” 66 Future people may hold a right to a healthy planet simply as human beings, whoever exactly they turn out to be. 67 So long as we conceive of nuclear deterrence as privileging us at the expense of post-holocaust generations as a group, we need not worry that it determines their identities. Finally, nuclear deterrence is unacceptable on utilitarian grounds. Philosophers have suggested other responses to the non-identity problem. 68 But perhaps the best reason to reject it as an escape clause for nuclear deterrence is that it violates our basic moral intuitions. It means, for example, that squandering resources harms no one in the far future, since different people will be born than if we conserve. Thomas Schwartz seizes on this to argue that we have no obligations to future people. 69 But such claims, as Parfit himself says, are not plausible. 70 In any case, for the non-identity problem to apply, future people must find life worth living. If their lives are wretched—as could well be the case after nuclear war—they could conceivably blame us for creating the conditions for them to be born at all.

FRAMEWORK EXTS – NUCLEAR WAR = RADIATION

Nuclear war causes massive radiation exposure and is the worst possible impact in any framework

IPPNW, ‘04 (International Physicians for the Prevention of Nuclear War, "Medical Consequences of Nuclear War", October 2004, [http://www.ippnw.org/Resources/MedEffects.html //](http://www.ippnw.org/Resources/MedEffects.html%20//) a-spomer)

In the immediate proximity of the explosion (10 km or less), injuries resulting from radiation exposure have little significance, because most (perhaps all) susceptible individuals will have died from the more rapidly fatal burn and blast injuries. At greater distances, radioactive fallout becomes a major source of short-term and medium-term health problems. Accurate predictions about the location and extent of radiation injuries are much more difficult for burn and blast injuries. The effects of radioactive fallout will depend on such factors as where the nuclear explosion takes place (an explosion in the air above a city will create much less radioactive debris and resulting fallout than an explosion at ground level), whether the local wind patterns that day are carrying fallout over heavily populated areas, and local weather conditions (on a rainy day, radioactive debris will be washed out of the air more rapidly, resulting in more intense fallout over a more localized area). Other important factors are whether individuals in the area of fallout are able to remain carefully sheltered, especially during the initial days of most intense radioactivity. For those without effective shielding from fallout, a one-megaton nuclear explosion taking place near the ground will create a lethal radiation zone (450 rad dose in the first 48 hours) of approximately 1300 square kilometers. Serious radiation exposures, producing illness but not generally death, will occur over areas several times larger. The most important medical problems resulting from acute radiation exposure include: central nervous system dysfunction (especially at very high doses); nausea, vomiting, and diarrhea from damage to the gastrointestinal tract, leading to potentially fatal dehydration and nutritional problems; and destruction of the body's capacity to produce new blood cells, resulting in uncontrolled bleeding (because of the absence of platelets) and life-threatening infections (because of the absence of white blood cells). Many affected individuals will not be aware that they have received a potentially lethal radiation dose until days to weeks after the explosion, when the damage to their blood system becomes evident through bleeding from the gums or within their skin, or through uncontrolled infections or unhealing wounds. Medical Care in the Aftermath of a Nuclear Explosion Estimates of the ultimate casualties from a medical disaster often depend as much on the resources that are available to treat the victims as on the source of the original injuries themselves. In the case of nuclear explosions near human populations, the barriers to effective medical care will be enormous. The most important of these are the sheer numbers of casualties and the fact that the explosion itself will have destroyed hospitals and other medical facilities and killed or injured most medical personnel. The report of the U.S. Institute of Medicine estimated, for example, that in the United States burn injuries alone would require 142 times as many intensive care unlts as would be available. Even for most of those with less severe injuries, however, effective medical care will likely be impossible. For example, many people in the aftermath of a nuclear explosion will have severe nausea and vomiting. Even if highly trained medical personnel are available, there will be no clear way for them to determine whether these symptoms are the result of lethal radiation exposure (in which case hospitalization with intravenous fluids and antibiotics is mandatory), or severe psychological stress with no significant radiation exposure at all (in which case emotional support alone is indicated). Effective use of the scarce medical resources that are available will simply not be realistic. Conclusion An understanding of the massive levels of death and irremediable suffering that would result from an explosion of even a single nuclear warhead near a populated area compels a simple conclusion: no such explosion must ever happen‹whether by accident, through a terrorist act, or in war. Prior to the Chernobyl nuclear disaster, expert nuclear scientists estimated that the probability of an accident at that facility was less than one chance in 10,000 years. Even if the odds of any single nuclear warhead exploding near a city were as low as that unrealistic estimate, the continued existence of tens of thousands of such warheads would make the combined likelihood of such a disaster in the years ahead a near certainty.

Cesium from nuclear radiation is worse than uranium

Atomic Archive, 98 ("Worldwide Effects of Nuclear War", p. 4 http://www.atomicarchive.com/Docs /Effects/wenw\_note5.shtml // a-spomer)

Both the local and worldwide fallout hazards of nuclear explosions depend on a variety of interacting factors: weapon design, explosive force, altitude and latitude of detonation, time of year, and local weather conditions. All present nuclear weapon designs require the splitting of heavy elements like uranium and plutonium. The energy released in this fission process is many millions of times greater, pound for pound, than the most energetic chemical reactions. The smaller nuclear weapon, in the low-kiloton range, may rely solely on the energy released by the fission process, as did the first bombs which devastated Hiroshima and Nagasaki in 1945. The larger yield nuclear weapons derive a substantial part of their explosive force from the fusion of heavy forms of hydrogen--deuterium and tritium. Since there is virtually no limitation on the volume of fusion materials in a weapon, and the materials are less costly than fissionable materials, the fusion, "thermonuclear," or "hydrogen" bomb brought a radical increase in the explosive power of weapons. However, the fission process is still necessary to achieve the high temperatures and pressures needed to trigger the hydrogen fusion reactions. Thus, all nuclear detonations produce radioactive fragments of heavy elements fission, with the larger bursts producing an additional radiation component from the fusion process. The nuclear fragments of heavy-element fission which are of greatest concern are those radioactive atoms (also called radionuclides) which decay by emitting energetic electrons or gamma particles. (See "Radioactivity" note.) An important characteristic here is the rate of decay. This is measured in terms of "half-life"--the time required for one-half of the original substance to decay--which ranges from days to thousands of years for the bomb-produced radionuclides of principal interest. (See "Nuclear Half-Life" note.) Another factor which is critical in determining the hazard of radionuclides is the chemistry of the atoms. This determines whether they will be taken up by the body through respiration or the food cycle and incorporated into tissue. If this occurs, the risk of biological damage from the destructive ionizing radiation (see "Radioactivity" note) is multiplied. Probably the most serious threat is cesium-137, a gamma emitter with a half-life of 30 years. It is a major source of radiation in nuclear fallout, and since it parallels potassium chemistry, it is readily taken into the blood of animals and men and may be incorporated into tissue. Other hazards are strontium-90, an electron emitter with a half-life of 28 years, and iodine-131 with a half-life of only 8 days. Strontium-90 follows calcium chemistry, so that it is readily incorporated into the bones and teeth, particularly of young children who have received milk from cows consuming contaminated forage. Iodine-131 is a similar threat to infants and children because of its concentration in the thyroid gland. In addition, there is plutonium-239, frequently used in nuclear explosives. A bone-seeker like strontium-90, it may also become lodged in the lungs, where its intense local radiation can cause cancer or other damage. Plutonium-239 decays through emission of an alpha particle (helium nucleus) and has a half-life of 24,000 years. To the extent that hydrogen fusion contributes to the explosive force of a weapon, two other radionuclides will be released: tritium (hydrogen-3), an electron emitter with a half-life of 12 years, and carbon-14, an electron emitter with a half-life of 5,730 years. Both are taken up through the food cycle and readily incorporated in organic matter. Three types of radiation damage may occur: bodily damage (mainly leukemia and cancers of the thyroid, lung, breast, bone, and gastrointestinal tract); genetic damage (birth defects and constitutional and degenerative diseases due to gonodal damage suffered by parents); and development and growth damage (primarily growth and mental retardation of unborn infants and young children). Since heavy radiation doses of about 20 roentgen or more (see "Radioactivity" note) are necessary to produce developmental defects, these effects would probably be confined to areas of heavy local fallout in the nuclear combatant nations and would not become a global problem

POLITICS LINKS – CONGRESS OPPOSES

CONGRESS WILL OPPOSE PLAN – LAWMAKERS BELIEVE NO HARM FROM DU – EMPIRICALLY HAS REJECTED PLANS TO STUDY AND CLEAN-UP

**Williams 04** [Thomas D., staff writer for CommonDreams.org, 11/1/04,*Weapons Dust Worries Iraqis*

*Provisional Government Seeks Cleanup; U.S. Downplays Risks*, <http://www.commondreams.org/headlines04/1101-01.htm>] TANNER

Last year, Rep. Jim McDermott, D-Washington, a U.S. Navy psychiatrist during the Vietnam War, sponsored a bill to pay for a definitive study of the health effect of DU munitions and to clean up dust and fragments after their use. The bill was referred to the House Armed Services and Energy and Commerce committees and then to the committee's Health Subcommittee, where it died.

McDermott's spokesman, Mike DeCesare, said the Republican leadership blocked the bill's passage. But a spokesman for the Health Subcommittee said the committee counsel could find no "aggressive action" by McDermott to get a hearing for it. DeCesare insisted, however, that if McDermott is re-elected, he intends to reintroduce the bill, which was supported by Connecticut Rep. Chris Shays, R-4th District.

"Depleted uranium is a potential health hazard for the Iraqi people and we need to do all we can to make sure that as Iraq is rebuilt, we help the new Iraqi government mitigate any public health threats," Shays said.

The debate over DU has not made much of an impact on the presidential race. President Bush sides with the Pentagon. The Democratic nominee, Sen. John Kerry of Massachusetts does not have a position on the use of depleted uranium munitions, his communications director, Andy Davis, said recently.

Independent candidate Ralph Nader, a Connecticut native, said DU munitions are environmentally dangerous and should never have been used in the first place.

"The denial and cruel coverup has gone on too long," Nader said. "These soldiers and civilians who suffered [adverse health from exposure to DU] deserve the truth and respectful assistance. The first step is to admit the problem. The second step is to measure the size of the problem and then clean up the environmental toxins. The next step is to stop using depleted uranium munitions."

But the Bush administration, which insists DU poses little environmental risk so cleanup is not needed, takes the Pentagon's advice on such matters.

"If the [Defense Department] indicated to us that the DU rounds or explosions were a cause of concern, and they have not

CONSULT NATO CP HELPERS – SAY YES

EUROPE OPPOSED TO THE USE OF DEPLETED URANIUM

**International Coalition to Ban Uranium Weapons 2008** “European Parliament passes far reaching DU resolution in landslide vote” <http://www.bandepleteduranium.org/en/a/181.html> carol

European Parliament has passed its fourth and most far-reaching resolution yet against the use of uranium weapons. MEPs have

called for an EU and NATO-wide moratorium and global ban. 22 The resolution reflects an increasingly outspoken position from the European Parliament on the issue of uranium weapons. It begins with a call for EU member states to submit reports on DU to the UN Secretary General in line with last year's General Assembly resolution and classifies DU along with cluster bombs and landmines as inhumane. In response to the wealth of new information on DU's threat to health, it then requests that the European Council and Commission launch studies into areas where DU has been used. It then calls for a halt to the deployment of military and civilian personnel in areas where DU has been used and urges member states to provide information on DU hazards to service personnel and civilian organizations. The resolution goes on to request that an environmental inventory recording the use of uranium weapons is set up and that a financial mechanism is put in place for victim assistance in contaminated areas. EU and NATO member states are finally urged to impose a moratorium on DU's use and to redouble efforts that may lead to a global ban. Moreover it calls on the EU to take a lead in working towards this goal if a link is made between uranium weapons and ill health is proved. The resolution was proposed by the Greens/European Free Alliance. ICBUW acted in an advisory role during the drafting of the text.