

# **Response to Questions Submitted at the February 8, 2007 Public Information Meeting Regarding the Town of Tonawanda Landfill**

## **Responses prepared by:**

**United States Army Corps of Engineers (USACE)  
New York State Department of Environmental Conservation (NYSDEC)  
New York State Department of Health (NYSDOH)  
Town of Tonawanda (Town)**

## **Questions # 1 to # 4: Directed to the US Army Corps of Engineers.**

### **Question # 1: Would your assessment regarding health risk change if you were advised that the soil was being excavated and disturbed?**

**USACE Answer:** The health risk assessment would not change if the soil were to be excavated and disturbed. The Corps of Engineers designed the risk assessment to be conservative in estimating the amount of contamination to which person could be exposed. Specifically, all contamination down to a depth of 2 feet was assumed to be available for exposure to a recreational user of the Landfill. This is in contrast to what is typically assumed for recreational exposure, which is generally limited to the top few inches of soil. Since the greatest level of contamination found in the Landfill was below 6 inches, including all the contamination within the top 2 feet would overestimate the true exposure to contamination for a person walking, riding across, or playing on the landfill soil.

Furthermore, the Corps did evaluate a hypothetical construction worker exposure in the Landfill, i.e., someone who was disturbing the soil, not necessarily someone who was placing a cap over the soil. This exposure assumed a greater contact with contaminated soil through increased potential for contaminated airborne dust which could be inhaled, and an increase in incidental ingestion of contaminated dust. The cancer risk due to this briefer but more intensive exposure to contamination was still below the U.S. Environmental Protection Agency (USEPA) acceptable risk limits. The Corps of Engineers is not a regulatory agency with regards to the Tonawanda Landfill. Therefore, the Town of Tonawanda does not need approval from the Corps of Engineers to conduct any activities in the Landfill; and the Town would be responsible for conducting their activities in accordance with NYSDEC regulations.

### **Question # 2: Have you identified the radioactive hot spots and what steps will you take for remediation?**

**USACE Answer:** Yes, sampling conducted by the U.S. Department of Energy during their preliminary investigations, and by the Corps of Engineers during the Remedial Investigation, found some small, isolated locations within the Landfill with levels of radium, uranium and thorium above the normal background levels. The Baseline Risk Assessment (conducted as part of the Remedial Investigation) divided the landfill into two exposure units. The first exposure unit contained all the small areas of elevated radioactivity, and used a conservative estimate of the average concentration of radionuclides across the entire exposure unit. The cancer risks from

exposure to the uranium, thorium, and radium in the first exposure unit, for the current and potential future site uses, are within the risk limits established by the U.S. Environmental Protection Agency. Under these federal laws that we are required to follow when addressing a FUSRAP site such as the Tonawanda Landfill, a remedial action is not warranted unless the cancer risks at the site exceed this risk limit. The second exposure unit consisted of the remaining area of the Landfill; and the cancer risks in the second exposure unit were even lower than those in the first.

The Corps of Engineers issued the Proposed Plan for public review and comment on March 26, 2007. The Proposed Plan identifies No Action as the Preferred Alternative for those soils containing uranium, radium and thorium at the Tonawanda Landfill Vicinity Property, which means that these soils may remain safely in place in their current condition.

**Question # 3: Have you forwarded a copy of that report to the NYSDEC, NYS Dept. of Health, Town of Tonawanda, and City of Tonawanda? (When and to whom would it have been sent?)**

**USACE Answer:** The Remedial Investigation Report contains all of the details regarding our sampling and analysis and our Baseline Risk Assessment. This report was sent to the Town of Tonawanda, the City of Tonawanda, the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health; and was placed in the Administrative Record File. The Corps of Engineers issued a news release on March 9, 2006, announcing the availability of the Remedial Investigation Report.

**Question # 4: Are you aware of the elementary school that borders the landfill? Have your decisions reflected the fact that young children are in the vicinity?**

**USACE Answer:** The Corps of Engineers is aware of the presence of Riverview Elementary School bordering the Tonawanda Landfill. Sampling of the Tonawanda Landfill by the Corps of Engineers and the Department of Energy found no evidence indicating that uranium, radium and thorium had migrated from the Landfill to the adjacent properties north of the site.

The risk assessment did consider the presence of the nearby residences and school property by evaluating an additional younger recreational site visitor, i.e., a youth who might be outside on the Landfill itself for 2 hours a day, 6 months a year, for 6 years. (Please see the Uncertainty Section of the Baseline Risk Assessment, page 6-35 of the Remedial Investigation Report.) This is a greater exposure than that assumed for adult visitors to the Landfill (2 hours a week, year-round, for 30 years). However, even when considering this greater exposure frequency for a youth, risks for any recreational user of the site are still within acceptable EPA risk limits for radionuclides.

In conclusion, the levels of uranium, radium and thorium found within the Landfill property would pose no threat to individuals on the Riverview Elementary School Property.

**Questions # 5 to #10: Directed to the NYS Department of Environmental Conservation**

**Question # 5: What was the facility allowed to accept, in terms of waste, after the closure permit was issued?**

**NYSDEC Answer:** First, it should be clarified that no closure permit has been issued for the landfill. The facility has been allowed to operate and bring in additional waste under the provisions of the Order on Consent executed between the Town of Tonawanda and the DEC in December 2001. The Town has contracted with EnSol, Inc. to oversee the operations at the landfill and to manage the applications for all waste streams proposed for disposal at the landfill. Each waste application, which includes information on the waste profile, generator certification and analytical testing results is prepared by EnSol and then submitted to the DEC for review and approval prior to acceptance at the landfill. The only exception to this requirement is with virgin petroleum contaminated soils, which are allowed to be approved by EnSol directly. These waste applications are then submitted to the DEC for a final cross check.

To date, the majority of waste that has been accepted at the Tonawanda landfill has been non-hazardous contaminated soils that originate from the cleanup of gasoline and fuel oil spills and tank removal projects. Another large percentage of the waste stream are roofing shingles and associated debris from residential and commercial roofing repair jobs. The DEC reviews each application to insure that all wastes are non-hazardous and additional waste streams that have been approved on a case by case basis include; excavated materials such as soil, stone and asphalt from road construction projects, soil and concrete excavated at old industrial cleanup sites, railroad ties, contaminated wood flooring, soil and debris excavated from above the water table at the Erie Canal Harbor project, sand blast waste, slag and aluminum oxide/magnetite waste.

**Question # 6: Under whose authority has the sludge from the Canal project been allowed in and has the sludge been tested?**

**NYSDEC Answer:** No sludge waste, either from the Erie Canal Harbor project or any other source has been allowed to be disposed of at the Tonawanda landfill as part of the ongoing closure project. The only waste generated from the Erie Canal Harbor that has been approved by the DEC for disposal at the landfill are soils, stone, brick and historical debris excavated from above the water table at the project site. In fact, the Soils Management Plan for the Erie Canal Harbor project specifies that all dredged materials and sediments from the site are to be disposed of at the US Army Corps of Engineer's confined disposal facility. The requirement that all waste from this project must be from above the water table has been clearly stated in the DEC's approval letters dated April 24, 2000, January 29, 2003 and January 10, 2005 to EnSol, the Town's landfill contractor. Additionally, the application to accept the sediments removed from the Hamburg Drain at the canal site was specifically denied in the DEC's December 3, 2004 letter EnSol.

**Question # 7: Has the Landfill been cited for violations by the DEC in the past ten years?**

**NYSDEC Answer:** Yes, the DEC has cited the Town of Tonawanda for violations on two occasions in the recent past. A Notice of Violation (NOV) letter was sent to the Town on November 18, 2005 for allowing leachate to flow to surrounding surface water in violation of the DEC's regulations (360-1.14(b)(2)). On November 27, 2006 a similar occurrence resulted in a NOV being issued to the Town for inadequate control of landfill leachate and also for inadequate placement of cover material over waste in violation of 360-2.17(c).

Additionally, on several other occasions the DEC has pointed out concerns regarding specific operational issues at the landfill, without issuing a formal notice of violation. A recent example of this includes the incident of odors being generated from the storm debris stockpiled at the site and the impacts this was having to the surrounding neighborhoods. DEC staff met with Town officials onsite in November 2006 and informed them that corrective actions were needed to control the odors.

**Question # 8: What was the final outcome or resolution to those citations?**

**NYSDEC Answer:** On both of the above referenced occasions, the Town's contractor quickly responded to the DEC. In November 2005, EnSol completed repairs to the breach in the drainage ditch the day after the DEC inspected the facility. In November 2006 repairs were completed to correct the noted violations within a two week time period.

Regarding the issue of odors affecting the offsite neighborhoods, the Town prepared an Odor Management Plan which was approved by the DEC in January 2007. The Town's contractor is beginning to implement this plan as of late February and it is anticipated that this will result in the reduction of odor generation and minimizing impacts to offsite areas.

**Question # 9: Given the radioactive issues related to the site, did the NYS Department of Health review the proposed closure process to insure safety of residents and the school children bordering the Landfill?**

**NYSDEC Answer:** Regarding the radioactive americium waste deposited in the landfill, yes the NYSDOH was involved in the review process in reaching the conclusion that the Am-241 waste could safely remain buried in the landfill. The NYS Task Force that initially evaluated the Am-241 waste issue in the mid 1980's was in fact, headed by the DOH, with assistance from the DEC and the Department of Labor. The DOH issued a letter dated April 10, 1989 that informed the Town of Tonawanda that their proposal to cover the Am-241 in the landfill with three feet of hard fill and a clay cap was "acceptable to the Task Force." The DOH was also directly consulted in the investigation which the DEC undertook from 2002 to 2004 to reevaluate the decision of the Task Force based upon additional sampling, analyses, dose assessments and current regulatory requirements. This investigation resulted in the Department issuing a report in July 2005 that supports the Task Force's earlier decision and concluded that as long as the americium remains insoluble and food crops are not grown in the contaminated soil, the americium will not present a significant radiation hazard to the public or the environment.

**Question # 10: How often do DEC monitors visit the site and where can I get copies of their notes?**

**NYSDEC Answer:** The frequency of site visits and inspections by DEC staff varies depending upon the activities being conducted at the landfill site. The DEC does not have a staff person assigned specifically to monitor the Town of Tonawanda landfill. As such, site inspections are conducted as needed to determine if the facility is operating in accordance with regulatory requirements. On an average, it is estimated that DEC staff routinely inspect the site about twice a month, with more frequent visits conducted when construction activities are ongoing. The DEC maintains files at the Region 9 office located in downtown Buffalo, which contain copies of all inspection reports and related correspondence which are available for the public to review. A request to review the Department's files should be submitted under the Freedom of Information Law (FOIL).

**Questions #11 to #22: Index Card Questions for General Response**

**Question # 11: Has there been any soil testing at Riverview School?**

**NYSDEC Answer:** The DEC has not conducted any soils testing at the Riverview School property and is not aware of any testing done by other agencies. At this time, there is no reason to believe that contamination from the landfill could impact this property; therefore there is no reason to conduct sampling of school property soils.

**USACE Answer:** The Corps of Engineers has not sampled the soil at Riverview Elementary School as part of the FUSRAP investigations. Sampling of the Tonawanda Landfill by the Corps of Engineers and the Department of Energy found no evidence indicating that uranium, radium and thorium had migrated from the Landfill to the adjacent properties north of the site. Therefore, there was no justification to extend FUSRAP investigations onto those adjacent properties.

The Corps of Engineers cannot address whether any other sampling has been done at Riverview Elementary School.

**Question # 12: What is the proposed height of the final grade? (Behind the homes and the school)**

**NYSDEC Answer:** The Town's contractor has prepared a final grading plan for the landfill. This plan indicates that the height of the fill will be at elevation 650 feet in the eastern portion of the landfill. Currently, this area has been filled to this final grade. Depending upon the offsite location to which this grade is compared to, this represents approximately a height of 25 feet to 30 feet above the grades of the nearby residential properties along Hackett Drive. Additionally, a final cap will need to be constructed on top of the landfill and this will likely add about three more feet to the final grade.

As the landfill is graded in areas further to the west, the proposed final grades slope down from this high point of 650 feet to elevations approaching 620 feet; close to the elevations of the

surrounding properties. Additionally, the DEC has recently directed EnSol to review the proposed final grading plan to determine if it is feasible to further lower the grades in the west area of the landfill without negatively impacting the slopes needed for proper closure of the site.

**Town Answer:** Along the northern boundary of the Landfill which abuts properties on Hackett Drive, the difference between the average elevation of those properties and the final grade of the Landfill, including a final cover, is an approximate average of 18 feet according to the currently approved grading plan.

**Question # 13: Will methane be collected as it is on BFI?**

**NYSDEC Answer:** Yes, a landfill gas collection system is required as part of the closure design. The exact design details of this collection system have not yet been determined as the closure plan remains in a conceptual phase at this point. It is anticipated that the gas collection system required for the Tonawanda landfill will not be as extensive as that which has been installed at the BFI landfill. This is mainly due to the types of waste that are in the landfills. The BFI facility operated as a sanitary landfill which accepted large volumes of household, putrescible waste. These wastes are known to generate a significant amount of landfill gas, which includes methane, during its' decay process. The Tonawanda landfill has mainly received more inert wastes such as incinerator ash, construction and demolition debris and contaminated soils, which do not generate a significant amount of methane gas. However, a modified gas collection and venting system will still be required as part of the closure plans.

**Town Answer:** Although there is no significant amount of methane generated at the Landfill, the conceptual closure plan does include a minimal number of gas vents as part of a modified gas ventilating system to be installed. There are no plans to collect Landfill gases, as may be the case at the BFI site, due to a different waste composition existing at that facility.

**Question # 14: What is the content of heavy metals and radiation and other pollutants in the runoff from the Landfill that enters into the City of Tonawanda sanitary sewer?**

**NYSDEC Answer:** The Town samples the landfill leachate which is discharged into the City sanitary sewer line. Monthly discharge reports are prepared by EnSol, Inc. and these include the lab results on the leachate samples. Analytical results are provided for the routine metals and leachate indicator parameters. Based on the data reported for monthly monitoring from September 2006 to January 2007, the quality of the discharge water can be characterized as a relatively weak, diluted landfill leachate. A partial summary of the leachate sampling data is contained in Table 1 below.

**Table 1 - Town of Tonawanda Landfill, Monthly Leachate Discharge Monitoring Data**

Parameter	Concentration Range	Units
Cadmium	ND	mg/l
Calcium	95 – 246	mg/l
Iron	5.7 – 51.6	mg/l
Lead	0.0052 – 0.044	mg/l
Magnesium	25.7 – 77.2	mg/l
Manganese	0.97 – 3.9	mg/l
Potassium	7.2 – 22.2	mg/l
Sodium	40.4 - 139	mg/l
Ammonia	ND – 0.12	mg/l - N
BOD	22.3 – 200	mg/l
Chloride	38 – 136	mg/l
Total Alkalinity	294 – 860	mg/l
Total Dissolved Solids	518 – 1410	mg/l
Total Suspended Solids	24 – 384	mg/l

**Town Answer:** Previous studies have shown that heavy metals and radiation do not pose a problem for leachate, groundwater or runoff at the site. Additional sampling and analysis is currently underway to provide further data and will be furnished to the City of Tonawanda when complete.

**Question # 15: Has anyone ever looked into the health issues that exist in that area?**

**NYSDOH Answer:** NYSDOH has conducted two cancer incidence studies in the Tonawanda area, both related to the former Linde site. The first study was a screening study of cancer incidence in ZIP Codes 14150 and 14217 and was released in 2001. This study found an excess of approximately 10% in total cancer incidence among both males and females, accounted for in part by excesses in colorectal cancer among males, and colorectal, breast and thyroid cancer among females. Colorectal, breast and thyroid cancers have all been associated with exposures to ionizing radiation, although they each have other known risk factors. Other cancers that have been strongly associated with ionizing radiation, including leukemia and lung cancer, were not found in excess.

To follow up on these findings, another cancer incidence study was done for a smaller area surrounding the Linde site. This smaller area includes the area directly south of the landfill. Findings of the follow-up study, which was released in 2004, showed an excess in total cancers among males, but did not confirm any of the other findings of the first study for the area closest to the plant. The report also includes a review of radiologic data, and concludes that there is no evidence that cancer incidence in the residential areas surrounding the former Linde site has been affected by potential radiologic exposures.

More recent data on cancer incidence by ZIP Code for the four most frequently diagnosed cancers may be found on the NYSDOH web site (<http://nyhealth.gov/statistics/cancer/registry/zipcode/index.htm>). These data show that in ZIP Code 14150 for 1999-2003, the numbers of cases of colorectal, female breast, lung and prostate cancers diagnosed were similar to the numbers that would be expected given the number of people of different ages living there.

**Question # 16: What collection system will be used for the runoff of the impermeable cap? What solutions do other communities use?**

**NYSDEC Answer:** Currently, the runoff water from the landfill is captured by a perimeter drainage ditch system and routed to a pond area at the north end of the site. From this point it is discharged into the City of Tonawanda sanitary sewer system where eventually it enters the Town of Tonawanda wastewater treatment plant. During the landfill closure design and construction phase the details of the surface water and leachate collection systems will be determined. Typically, once the entire landfill is properly capped all surface water runoff will be handled as uncontaminated storm water. At the Tonawanda landfill, the collection system will include perimeter drainage ditches that will discharge into storm water retention pond(s). These ponds will function as sedimentation basins prior to the storm water being discharged to surrounding waterways. This method of handling surface water runoff is typical for other landfill sites located in NYS.

**Town Answer:** Perimeter drainage channels, sedimentation ponds and erosion and sedimentation control practices (i.e., seeding, mulch and vegetation) will be used to control runoff and its effects. These are standard stormwater control measures used in other communities across the state.

**Question # 17: Are the mudflats in the Landfill or do they border outside of the Landfill? What about the NiMo right of way?**

**NYSDEC Answer:** The mudflats are the low lying area located to the south of the landfill and north of the I-290 Youngman Expressway. Wastes were not placed in the mudflats and they are not considered to be part of the landfill. The Niagara Mohawk Power Corporation (NiMo) right of way is the area located immediately adjacent to the south edge of the landfill. Previous investigations have shown that waste materials extend onto the NiMo property in some locations. The Town will be excavating most of this buried waste and relocating it into the landfill to be properly contained.

**Town Answer:** Both the mudflats and the NiMo ROW are outside the boundary of the Landfill.

**Question # 18: What were the conclusions reached by the COE in its Remedial Investigation report issued in 2006?**

**USACE Answer:** The Remedial Investigation Report concluded that although there are isolated spots within the Landfill with levels of uranium, radium and thorium above the normal background levels, the human health risks from those particular radioactive elements at the site, for current and potential future site uses, are at or below the risk limits established by the U.S. Environmental Protection Agency.

**Question # 19: Do you have evidence that Americium 241 can be contained? Do you have any long term experience with any other landfills that have Am-241? Where?**

**NYSDEC Answer:** The areas of the landfill known to contain the americium-241 waste materials are well defined. The plans for closure of the landfill call for these areas to all be covered with a minimum of several feet of additional grading material and then to be covered by an impermeable landfill cap. The leach testing the Department conducted for the 2005 report demonstrated that the americium is insoluble under current groundwater conditions at the site. This means that the americium should not readily dissolve into the groundwater or migrate from the landfill site. Groundwater sampling conducted by the Department for the 2005 report confirmed this. Very little, if any, americium-241 was found to have reached the groundwater in the twenty years since the material was placed in the landfill. The Department knows of no other landfill in the state that contains americium-contaminated ash. (Americium is probably present, in a different form, in all landfills that received household waste during the last thirty years. Household smoke detectors contain exempt quantities of americium-241, and are routinely disposed of in landfills, as allowed under federal and state regulations.) Given the current conditions at the site, the proper closure of the Town of Tonawanda landfill will provide for the secure containment of americium in the landfill. Long-term control and restrictions of site use, along with routine post closure maintenance and environmental monitoring will be required of the Town, to ensure that the americium remains contained in the landfill.

**Question # 20: Your recommended recreational dose is much lower than what residents would get over time. How do you address the risks to our health?**

**USACE Answer:** The Baseline Risk Assessment evaluates the health risk to the individuals with the greatest potential for exposure to contaminants, based on the current and potential future site uses. Because the residences are not built directly on the areas of the Landfill where uranium, radium and thorium were found, the potential for exposure to the residents is low. An individual would need to have direct contact with the radioactivity in order for any exposure and subsequent cancer risks to occur. There are several ways in which a person could come into contact with the radioactivity, such as by incidentally eating contaminated dirt, breathing contaminated dust, or receiving external gamma emissions. The external gamma emissions drop rapidly as you move away from the radioactivity in the Landfill, and movement of contaminated dust from the Landfill to adjacent residences is minimal because of the extensive vegetation covering that part of Landfill. Therefore, the greatest exposure occurs when someone comes onto the Landfill. Because of the proximity of the residences to the Landfill, we assumed that the recreational use of the Landfill itself would be regular (approximately 2 hours per week) and

prolonged (every week for 30 years). We also looked at a shorter but more intensive recreational use of the landfill as might be typical for a youth (2 hours per day for 6 months per year, for 30 years). The recreational use scenario evaluated in the Baseline Risk Assessment is a reasonable estimation of the exposure to individuals that may come onto the Landfill property; and is based on observations of the current site conditions and risk assessment guidance from the U.S. Environmental Protection Agency.

**Question # 21: Should the homeowners have their own remediation plan due to your findings?**

**NYSDEC Answer:** There is no need for homeowners to develop a remediation plan for their properties based on the information available to date. The Town of Tonawanda, as the owner of the landfill is responsible for the proper closure and remediation of the site. If it is determined that waste materials and/or contamination attributed to the landfill is impacting offsite properties, then the Town and/or other potentially responsible parties will be held liable for remediating such impacts. The decision to hire an outside consultant or contractor is ultimately up to each individual property owner, however there appears to be no justifiable reason to proceed in this manner at this time.

**Question # 22: The odors started in the summer before the October Surprise; what was the cause then? It was like raw sewage.**

**NYSDEC Answer:** The Department first became aware of a significant odor problem during November 2006 when the Town's contractor began stockpiling the waste wood chips on top of the landfill. As stated previously, the Department directed the Town to immediately cease this activity and has subsequently worked with the Town to develop and carry out an odor abatement plan. The source of odors prior to this time frame, i.e., during the summer of 2006 is uncertain. There are several possible sources for such odors. These include the activities associated with relocating some of the buried wastes along the edges of the landfill, possible odors from certain materials such as paper mill fiber which was temporarily mixed with topsoil at the site, the Town of Tonawanda wastewater treatment plant on Two Mile Creek Road, two other wood chip/debris stockpiles also located on Two Mile Creek Road and the stockpile of leaves, yard trimmings and soil the Town has been accumulating near the front entrance to the landfill site. The onsite yard debris pile will be incorporated into the composting operation as part of the odor abatement plan so this potential odor source will be eliminated. The Department will monitor and respond to any other odor complaints in the area to determine if the two other wood debris stockpiles, one operated by the City of Tonawanda and the other by the Niagara Mohawk Power Corporation, may be contributing to the odor problem. The Department will also oversee any future waste relocation work to be done at the landfill site to determine if this becomes a source of odors. This includes the relocation of the wastes buried on the Niagara Mohawk Power Corporation right of way planned to be completed in the spring of 2007.

**Town Answer:** Several loads of paper mill fiber for topsoil amendment were placed within the Town's topsoil stockpile located near the Landfill. Such stockpiling was terminated once odors became apparent. No future placement of this material within or near the Landfill is planned.

## **Questions #1 to #5: Directed to the NYS Health Department**

**Question #1: If the radioactivity is below health limits, who so much cancer? Nobody has done a poll in the Riverview Section. On a street of approximately 35 there has been 26 cases of cancer, 3 being in my house, two have died.**

**NYSDOH Answer:** See response to Questions #5 (below) and Question #15 (under index card questions).

**Question # 2: What health impacts am I looking at for my children?**

**NYSDOH Answer:** We would not expect to see any health impacts to children (or adults) from the radioactive contamination in the landfill. It appears there is little if any radiation exposure to local residents from these materials. Based on the Corps of Engineers analysis, in order to receive a radiation dose from this material, someone would need to go onto the landfill and spend time directly on the contaminated areas. Under such a scenario, the amount of radiation someone might receive would be very small – only a fraction of what we all receive as part of background radiation – see DOH web site for more information on background radiation. Since the dose is small the potential risk of health effects such as cancer, is also small. More information on the health effects of ionizing radiation can be found at the NYSDOH web page (at: [www.health.state.ny.us/environmental/radiological/radon/radh1thb.htm](http://www.health.state.ny.us/environmental/radiological/radon/radh1thb.htm)).

**Question # 3: What are the acceptable levels for Americium, uranium, radium and thorium?**

**NYSDEC Answer:** The Department of Environmental Conservation defines acceptable levels of radioactive materials in soil in terms of the radiation dose a person could receive from the radioactive materials, instead of setting numerical concentration levels for each radionuclide. In our *Cleanup Guidelines for Soils Contaminated with Radioactive Materials*, (DEC Program Policy #DSH-RAD-05-01) we recommend that sites be remediated to the point that the radiation dose to a member of the public would not exceed 10 millirems in any one year. For comparison, people receive around 100 millirems each year from naturally occurring radioactive material in their bodies and in their surroundings. (This does not include the radiation dose from radon or medical uses of radiation and radioactive material.)

**USACE Answer:** The acceptable concentrations of uranium, radium, and thorium can vary depending on site-specific conditions. When investigating a site under the FUSRAP, we are obligated to use the CERCLA process. Using this process, we do not just look at a specific concentration limit for the uranium, radium and thorium. Rather, we use the concentrations detected at a site to determine the cancer risk to a site user, using guidance established by USEPA. If the resulting cancer risk exceeds the cancer risk limit established by USEPA, then some form of action is required to address the contamination. If the cancer risk is within the USEPA risk limit, then remedial action is not required for a site. The established cancer risk limit is an additional incidence of cancer in a population of 10,000 people.

**Question #4: What will the above levels be (#3 above) after completion of the project?**

**NYSDEC Answer:** After the project is completed, a person will not be able to receive any radiation dose from the americium.

**USACE Answer:** At the Tonawanda Landfill and Mudflats, the cancer risks from the uranium, radium and thorium, for the current and potential future site users, are within the USEPA acceptable risk limits.

**Question # 5: It seems that there is a high rate of females dying on my street, 4 plus my wife. Can you explain?**

**NYSDOH Answer:** Unfortunately cancer is very common. One in three persons will be diagnosed with cancer some time in their life. Although we think about cancer as one disease, it is actually more than 100 different diseases with different risk factors. When the State Health Department investigates cancer concerns, one of the first things we do is look to see if people have the same kind of cancer. If they are different, they are probably not related to the area, but more part of the aging process, because growing older is the biggest risk factor for getting cancer. It is not uncommon to begin to hear more and more about cancer among our peers when we reach middle age – which is when we would expect to find cancer.

Many causes of cancer have been identified. While exposures to ionizing radiation can cause cancer, factors associated with personal habits and lifestyle, such as tobacco use and diet, are believed to contribute to the majority of cases. Other risk factors that have been identified include reproductive history, genetic factors, viruses, exposures in the workplace, and certain drugs and medical procedures. It is important to take all these into account when looking at cancer patterns in a community.

More information on cancer can be found on the NYSDOH web site (at: <http://nyhealth.gov/nysdoh/cancer/center/cancerhome.htm>)

**Questions #1 to #7: Directed to the Town of Tonawanda**

**Question #1: How was the town able to divert millions of dollars allocated to the Landfill to buy totes for the Town? How many dollars did the Town move?**

**Town Answer:** The Town's solid waste management fund contains line items for both the operation of the Landfill and the purchase of the totes. The cost of the totes was approximately \$1.5 million. For more details see attached February 2, 2007 letter from the Town Supervisor [REDACTED] to City of Tonawanda Councilman [REDACTED]. Also, it is noted that the \$2.3 million dollar amount referred to in the referenced letter was incorrectly stated, with the correct amount being \$2.0 million, which is the NYSDEC landfill closure grant program cap.

**Question #2: Who approved a permit for the road to be built?**

**Town Answer:** In a February 22, 2007 letter from [REDACTED], a road connecting the Spaulding Fibre site to the North Youngman Commerce Center is currently being considered by the Erie County Department of Environment and Planning. However, no design has been prepared, nor has any permit been issued to date. If a road is eventually proposed, it will be incorporated into the Landfill closure design, and all permitting procedures will be followed. The Town does not currently have an official position on this matter as it relates to the Landfill.

**Question #3: Will the connection from the Town to the City of Tonawanda sewer be disconnected?**

**Town Answer:** The Closure Plan for the Landfill has not yet been finalized. Such a Plan, when prepared, will incorporate the most effective leachate collection solution and leachate handling method. Currently, this sewer connection is expected to be terminated.

**Question #4: Who authorized the drain from the leachfield to the City of Tonawanda sanitary sewer and why?**

**Town Answer:** The City of Tonawanda Engineering Department and the Town of Tonawanda both approved the connection as being necessary to manage leachate collection during the Landfill operations and closure process. Design drawings were submitted and a permit issued prior to construction.

**Question #5: Is this drainage being monitored?**

**Town Answer:** A sampling plan has been implemented which includes testing as an on-going process. For illustration see attached memorandum dated March 3, 2007 from [REDACTED] (Town Director of Water Resources) to [REDACTED] (Town Comptroller).

**Question #6: How many gallons have been discharged since April of 2006 when the City permitted this?**

**Town Answer:** In a March 20, 2007 memo from [REDACTED] from August, 2006, through February, 2007, a total of 5,412,450 gallons have been discharged. The system was put into service on August 10, 2006.

**Question #7: Why did you dump behind the houses instead of the mudflats?**

**Town Answer:** The mudflats are not within the boundary of the Landfill. The Landfill was in use prior to the construction of the homes adjacent to it. The Landfill is now being brought to appropriate closure grades for proper drainage.