

Health Care causing more Harm than Help: The Detrimental Impact of Medical Waste on a vulnerable Environment!

Nov 29th, 2011 by [Tia](#)

Negligent medical waste management is a major environmental issue. Being that I want to be a surgeon, this topic really hits home. It amazed me to see the amount of damage the health care system is causing to the same people they are trying to help. The impact of medical waste is multidimensional and causes damage to many communities. For example, there have been numerous reports of the negligent waste management procedures that have caused many people to get sick. The negligence of the health care system is not only affecting people but wildlife as well. The health care system accumulates 2.4 million tons of waste each year (The greening of Health care), and nobody is sure on how to properly discard it. This is an issue that gets very little attention, so not very many people know much about what's going on besides the ones who are affected. This needs to change in order for us to be able to properly help these victims. The first step in this process would be to let the public know what medical waste is.

What is Medical Waste?

Medical waste is waste created as a result of diagnosing, treating, and immunizing animals or people. Medical waste also results from research laboratories that conduct experiments using biological products (Medical Waste Tracking Act of 1988). Medical waste is broken up into four categories: infectious, hazardous, radioactive, and general. Infectious waste contains a sufficient amount of a pathogen that can cause the spread of infections to the environment and people who are exposed to it. This includes bandages, used surgical gloves and clothes, blood and other body fluids and tissues, syringes, etc. Hazardous waste needs to be carefully handled and incinerated at temperatures high enough to break down the chemicals into their individual components like water, carbon, etc. These individual components are then filtered so that only the non-harmful gases are released to the environment while the toxins are not. Radioactive waste is pretty self-explanatory, waste that contains radioactive materials, and general waste are those that don't fall into any of these other categories.

The problem

Many hospitals and health care facilities are not properly disposing of their waste, and many incidents occurred to draw attention to this fact. Approximately 1,400 bags of medical waste were discovered at a warehouse. Syringes and medical prescription bottles have been found washed up on beaches, and damaging amounts of mercury and other dioxins has been reported to be released into the environment (Issues in Medical Waste). These are just a few of the things that result from the improper disposal of medical waste.

The major problem with medical waste is the burning of the material in large incinerators and the improper disposing of the medical products. Incineration has been practiced for many years now. People believed that burning waste was the easiest and most effective way to eliminate the

spread of contaminants, but they did not realize that by doing this, they are exposing people to many more dangers. The gasses released by hospital incinerators, which are coincidentally located in very highly populated minority areas, are polluting the air. Many people in those areas have been reported to be suffering from respiratory diseases/illnesses, and related heart diseases (Lott, 2000). To make matters worse, not only are the people living in those areas getting sick, but the people in hospital are getting sick as well. Hospitals with incinerators sometimes face the problems of having the toxic gases leak through the ventilation of the building, which affects the patients and the workers. Municipal incinerating companies are taking actions toward; doing this protects their workers by banning the incineration of unsterilized medical waste due to the fact that it can cause harm to the employers. Although this is a good thing for the employers, this causes a buildup of collected medical waste, and as a result, hospitals incinerate their own waste.

Incineration of medical waste also has great effects on wildlife. Many of the hospital's waste are considered infectious and possibly dangerous, which lead hospitals to believe that it was better to burn them instead of filling them in landfills. Although the intention of this action is good, the effects of this action are the contrary, if not properly done. When burned, medical waste emits several air pollutants including, dioxins, acid, and dangerous metals like mercury. These pollutants then fall to the land and the waters and cause damage to a lot of the wildlife exposed to it. When fish ingests mercury, it turns into the form of Methylmercury which bioaccumulates, meaning it is stored in the tissues of organisms instead of being broken down and dissipated ("Mercury answers,"). The Methylmercury is then passed on from many different organisms through the food chain, which is a process called biomagnification or bioamplification. At each level of the food chain, organisms digest higher amounts of mercury than they are excreting, which causes an excess of mercury in that organism. Organisms in the higher trophic levels suffer more because they have the largest amounts of mercury in their systems (Ecological effects of,). This is the case for dioxins as well.

Mercury and dioxin concentrations can be harmful to the organism ingesting them first hand, and to the predators of those organisms. Young fish for instance are exposed to either mercury or dioxins first and second handed. They are exposed from the eggs that they are hatched in, due to the pervasion of the pollutants through their parents, and from ingesting the toxins first hand after being hatched. For this reason, young fish are affected more by the toxins released into the waters. This causes the birds, which are higher up in the food chain, to be indirectly affected by the contaminants in greater measures. The fish eating birds and the bird-eating raptors will have greater levels of the pollutants in their systems because they are higher up in the food chain.

The effects of these toxins are very detrimental to both humans and wildlife. Both mercury and dioxins have no known benefits to any organisms that they are exposed to, and although they are not harmful in small amounts, the accumulation of them can have disadvantageous effects. Mercury is a teratogen (Ecological effects of,), which is a drug or substance that has the capability of interfering with the development of a fetus, causing birth defects (dictionary.com). Mercury is also a mutagen and a carcinogen, meaning it may cause mutations in the cells of organisms, and different types of cancers. Dioxin is the general name for chlorinated hydrocarbons, which like mercury, may be both teratogenic and carcinogenic. The burning of medical products that contains PVC creates them. These toxins were reported to cause edema in chickens, ultimately causing hydropericardium syndrome ("The chick edema," 2009), which is

sudden death in chickens. High rates of egg mortality have been reported in wild birds due to their eggshells thinning. Out of the few chicks that did survive, most had birth defects like twisted beaks, abnormal brain structures, and short lifespans; the population of bald eagles in America dramatically decreased due to this fact. Snapping turtles in the area near the contaminated creeks of Lake Ontario were reported to have deformed tails, shells, skulls, and limbs. Fish exposed to the toxins were also reported to develop reduced gonads, or become cross-sexed, which is neither male nor female (Monks, 1994). The effects of these toxic chemicals are similar in humans. Dioxins cause problems with the reproductive, endocrine, and the immune system. Mercury is a neurotoxin and causes damage to the central nervous system, brains, kidneys and lungs (“Medical waste incineration,”).

Another problem that comes along with excess of medical waste is the illegal dumping of it. The dumping of medical waste is very risky and grants access to dangerous things like syringes and infected body fluids and tissues. This was the case in Indianapolis, Indiana when twelve children were found playing with valves of blood; two of them were valves containing blood infected with AIDS. The valves were discarded in a dumpster outside of a medical office. In some instances, medical waste has been reported to wash up on beaches. In 1988, syringes, needles, and prescription bottles were found on the shore of Long Island beach, New Jersey beach, and many other beaches from the Maine to the Gulf of Mexico, forcing them to close several times. This leads to an excessive amount of water pollution. Illegal dumping of medical waste doesn't only affect people, but it affects animals as well. In some instances, medical waste can be dumped in a part of forest, which is allowing animals' free access to infectious medical waste. This can have different effects on the ecology of that environment, which can in hand have major effects on the ecosystem as a whole.

Proposed Solutions

There are many solutions that were proposed by many different people in many different fields but not all of them seem plausible. Some people felt that hospitals can develop ways of waste reduction and recycling. Most of the waste accumulated and incinerated in hospitals is believed to be recyclable. If that is the case, the recycling of these materials will decrease the amount of waste incinerated and decrease the amount of pollution. This doesn't seem like a reliable solution due to the fact that most of the burned materials from a hospital are infectious. I don't think people will feel comfortable with using recycled infectious tools to do future surgeries or any other medical procedures. Autoclaving is another alternative for incineration. Autoclaving is the process of disinfecting materials by using intense amounts of heat and pressurized steam. This will eliminate the harmful contagions on the material making it safe for them to be dumped in landfills. This is good but they don't take into account that many of the landfills are filling up and adding more waste to them will cause them to overflow. In all actuality I believe this is already the case which I why the waste is being illegally dumped. Hospitals can also try using materials that are safer for the environment. There are many things that can be used that don't contain PVC and other dioxin chemicals as a substitute for currently used tools. For instance hospitals and medical facilities can use thermometer that don't have mercury. This way, when the waste is incinerated, the toxic chemicals that are released will be decreased or maybe even eliminated (“Medical waste incineration,”). The use of air scrubbers is the best-proposed idea

thus far. Air scrubbers are filters that are designed to remove the toxic chemicals out of the air released by incinerators (Lott, 2000).

All of the proposed ideas have both benefits and downfalls but no one solution will work to fix this problem solely. The implementation of many of these solutions at once will dramatically change the outcomes of getting rid of medical waste, thus making hospitals and other medical facilities 'Green'. All materials that are used in hospitals should go through a sterilization process before it can be disregarded of, regardless of whether they are incinerating it or dumping it in landfills. The use of air scrubbers should also be implemented to eliminate the toxins that might not have been removed during the sterilization process. Air scrubbers were reported to be very successful at eliminating toxins in the environment. In 1988, Henry Ford Hospitals spent 2.1 million dollars on air scrubbers and they were able to not only reduce the amount of toxins released, but they were able to do ten times better than the standards implemented by of Environmental Protection Safety Standards required by law (Lott, 2000). Also the use of less toxic materials can prevent the exposure of chemical toxins to people first hand. If they are not present to begin with, fewer measures will have to be taken to prevent them from spreading. There is a fairly simple solution for combatting the illegal dumping of waste, which is the enforcement of the laws that are already in place that deems that act illegal. If the laws are enforced more, hospitals and other medical facilities will take them more serious, making them more hesitant to illegally dump their medical waste.

Conclusion

I have touched upon a few of the issues that come along with the excessive amounts of medical waste. This is just a small part of bigger issue, which is excessive amount of waste in general. We need to come up with more innovative ways of doing things that can be beneficial to both us and the wildlife we share this earth with. We have so many environmental issues that we cause because we try to take the easy way out and find convenient solutions for problems. And as we can see from the damages caused by the convenience of incinerating waste, that convenience is not always the way to go. We need to take the time to evaluate all of the factors and consequences that comes along with making decisions on things that can possibly dramatically affect our environment. We need to stop taking advantage of the earth and we can do this by first fixing the imperfect medical system, which is ironically a system that is supposed to be designed to help the people and organisms that they are damaging. Once this movement is sparked, people will begin to follow along and do things in ways that will benefit the environment, and as a whole, we can work to reduce the size of our huge carbon footprint.

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