

To asses the impacts of solid waste disposal

[Environment](#), [Pollution](#)



Solid waste disposal is one of those rare endeavors where success breeds anonymity. To the credit of local waste management agencies and contractors, their service is highly inconspicuous in northeastern Illinois. This low profile belies the importance and complexity of efficient trash collection, and veils many impacts of municipal solid waste (MSW) policy from our everyday lives. Like other environmental elements, waste does not follow regional borders. From an email survey that we conducted of the solid waste professionals in the region, there was a general feeling that rural areas were burdened with waste exported from urbanized areas and were therefore left to deal with the various impacts associated with disposal, particularly landfilling. To better analyze these impacts, this report divides them into four categories: environmental, economic and land-use-related. Each will be described in detail and linked to potential strategies for maximizing the efficiency, capacity, and environmental stewardship of our waste management services well into 2040.

Landfills Environmental Impacts:

- **Hazardous gas emissions:** In 1987, the EPA estimated that the nation's 7, 124 landfills emitted 15 million tons of methane per year and 300, 000 tons of other gases like toluene and methylene chloride (Philips, 1998). As mentioned earlier in the report, methane is a powerful greenhouse gas and landfills contributed 23% of total emissions in 2006 (USEPA, 2008). In addition to its effect in the ozone layer, methane is also a highly combustible gas that may be responsible for various explosion hazards in and around landfills.
- **Water Quality/Contamination:** There is no expert consensus about the impact of MSW on surface and groundwater sources. Some argue that even common MSW items such as newspaper pose a significant risk to water

quality, while others argue that the effect of landfills on groundwater would be negligible if hazardous materials (e. g. motor oil, paint, chemicals, incinerator ashes) were prohibited from the sites (Johnson, 1978 and DeLong, 1993). Experts also argue that while leachate is a clear environmental liability, the frequency and severity of leachate-related problems is uncertain and can be minimized through proper siting and sealing measures. However, if leachate does seep into groundwater, it can be the source of many contaminants, specifically organic compounds that may decrease the oxidation-reduction potential and increase the mobility of toxic metals (Kelly, 2002). Locally, some solid waste managers catch errant leachate and pump it back into the landfill. This process helps keep it from seeping away and actually hastens the decomposition of the landfill contents.

- Energy Consumption: As a community's tolerance for landfills decreases, they are moved farther from densely populated areas, requiring collection trucks to drive farther distances to unload. Also, the complexity of collection routes can affect energy consumption. This frequent and lengthy travel by gas-consuming vehicles is also detrimental to air quality and results in increased green house gases.
- Natural Habitat Degradation: As land is claimed for landfills, it is no longer hospitable to many plants and wildlife. Often, this fertility cannot be completely reclaimed, even after the landfill is capped.
- Biodegradation: Responsibly sited and managed landfills are often preferred over other waste disposal methods, such as incineration, because, aside from being more economical, they allow most waste to decay safely and naturally. Conversely, the positive effects of biodegradation are often overstated when, in reality, landfills tend to mummify their contents,

severely prolonging oxidation and natural breakdown processes (DeLong, 1993). | The Illinois State Water Survey found that the Calumet region of South Chicago is heavily polluted with heavy | | metals, organic compounds and inorganic ions (Kelly, 2002). Meanwhile, chloride concentrations showed higher rates | | of change in Kane and McHenry Counties that were attributed to rapid changes in land use. This could potentially be | | a result of old landfills or other waste disposal systems that were present in the area | |

Does the amount of packaging in a product affect your decision in purchasing it? Do you look for products made from | | recycled content/material when you are shopping? | Economic Impacts: -

Siting Resistance and Regulation: No one wants to live near a landfill, and as regions urbanize, it becomes more difficult to find land that is suitable for dumping and amenable to the surrounding population. Couple this with increasing regulation, and it becomes more difficult to efficiently and diplomatically site a landfill. This difficulty often causes politicians to postpone siting new landfills by encouraging alternative means of solid waste disposal (DeLong, 1993). - Disposal Costs: Unlike recycling, which requires reprocessing used materials, or composting, which requires intensive sorting, landfill dumping needs far less money and effort. This superior efficiency is a major reason that landfilling dominates the waste disposal industry, even when other methods are more environmentally sound. Landfill operators and waste management companies have traditionally benefited from the facilities due to the tipping or disposal fees that garbage haulers (whether public or private) pay per tonnage to deposit their waste. Counties charge a hosting fee from the landfill and that is

generally used to fund the county solid waste management department and to enhance alternative waste disposal such as recycling and composting as well as promoting public awareness of the importance of the 3R's- Reduce, Reuse, Recycle. | Do you feel you are paying too much, too little or a reasonable amount for solid waste disposal in your community? | Land-Use Impacts: - Siting: When siting a landfill, the following issues must be addressed (Phillips, 1998):

- o Airport Safety: landfills attract birds, which can threaten aircraft.
- o Floodplains: if a landfill must be sited in a floodplain, extra steps must be taken to ensure that its contents will not flow from the site during a flood.
- o Wetlands: while wetlands should always be avoided when locating landfills, exceptions may be allowed if there is no alternative site in the area, and if the environmental impact is proven to be minimal.
- o Unstable Areas: landfills should not be sited in areas threatened by mudslides or other forms of earth movement.

The above restrictions mean that landfills will compete with other types of land uses for valuable and scarce land. With current fuel costs, hauling waste to far-flung areas makes it unprofitable to operators as well as to residents who have to pay for collection. Social Impacts: Although landfills and transfer stations provide an important municipal service, they have historically been associated with breach of environmental justice because they have often been located in low income areas and in communities of color (National Environmental Justice Advisory Council, 2000). More prevalent in New York City, Washington DC, Atlanta and San Francisco, among others, these issues of environmental justice were centered upon the fact that the waste came from outside the communities where the facilities were located, that they resulted in negative

impacts such as degraded health and environmental conditions and compromised community revitalization plans and economic activity. -

Introduction - Previous Recommendations - Existing Conditions - Waste

Disposal Facilities - Other Solid Waste Processing - Impacts of Municipal Solid

Waste - Conclusion - Recommendations - Bibliography - Recycling -

Composting Top of Form Bottom of Form