

MSU Product Center

For Agriculture and Natural Resources

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Major forces driving biobased products - Environmental factors

- The U.S. transportation sector's dependence on petroleum based fuels is viewed as one of the factors that contribute to a number of environmental problems (e.g., carbon dioxide emissions).
- Producing and using biofuels for transportation is expected to reduce carbon dioxide buildup significantly.
- An increased use of plants and trees as biomass feedstocks for biobased products is also expected to lead to further carbon dioxide deduction. Because these plants require carbon dioxide to grow.
- Biofuels, such as ethanol, that are used as oxygenate addition in gasoline could also improve air quality by reducing emissions from older, high-polluting vehicles.
- There are water pollution issues that are associated with the use of petroleum-based fuels (e.g., marine oil spills, ground water contamination, and run-off resulting from fuel spills). Biofuels are expected to replace toxic parts of petroleum based fuel with fuels that are biodegradable in water, reducing the threat that gasoline poses to waterways and ground water. Spills or leaks of biofuels are expected to constitute no environmental hazard.
- Nearly half of the land fills in the U.S. are approaching to capacity and are expected to close in the near future. There are two benefits that could be derived from the bioeconomy. (1) Part of the waste that is produced from the agri-food sector is lignocellulosic material that can be converted into useful components and biobased products. This is expected to partly reduce the growing waste problem. (2) Increased production of biodegradable products (e.g., biobased plastics) will reduce the impact of high volume petrochemical products in landfills (e.g., petrochemical plastic has an estimated life span of 1 million years).
- These environmental concerns are deriving increased emphasis on biobased and clean products and processes (e.g., banning the use of nondegradable plastic waste for yard waste has paved the way for using some sugar-based plastics that are becoming more competitive with those produced from petroleum based feedstocks).

Sources

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