

Department of Legislative Services
 Maryland General Assembly
 2011 Session

FISCAL AND POLICY NOTE

House Bill 903 (Delegate A. Kelly, *et al.*)
 Economic Matters

Task Force on Green Chemistry

This bill establishes a Task Force on Green Chemistry to study various aspects relating to “green chemistry” and make recommendations related to the development of a program to promote green chemistry in the State. The Department of Business and Economic Development (DBED) must provide staff for the task force. The task force must report its findings and recommendations to the Governor and the General Assembly by January 1, 2013.

The bill takes effect July 1, 2011, and terminates June 30, 2013.

Fiscal Summary

State Effect: General fund expenditures increase by about \$50,000 in FY 2012 and 2013 each for DBED to contract with a private consultant with expertise in green chemistry to implement the bill. Revenues are not affected.

(in dollars)	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Revenues	\$0	\$0	\$0	\$0	\$0
GF Expenditure	50,000	50,000	0	0	0
Net Effect	(\$50,000)	(\$50,000)	\$0	\$0	\$0

Note:() = decrease; GF = general funds; FF = federal funds; SF = special funds; - = indeterminate effect

Local Effect: None.

Small Business Effect: None.

Analysis

Bill Summary: The task force must study existing (1) models for promoting green chemistry at the State and federal level; (2) State, federal, and international laws governing the use and management of hazardous substances; (3) methods for evaluating the impact of manufacturing processes and products on health, safety, and the environment; and (4) methods for comparing alternative manufacturing processes and products.

“Green chemistry” means chemical engineering to design chemical products and manufacturing processes that reduce or eliminate the generation and use of hazardous substances across the life cycle of the substances based on 12 specified principles.

The task force must meet at least quarterly. Members of the task force may not receive compensation but are entitled to reimbursement for expenses under the standard State travel regulations.

Current Law/Background: According to the U.S. Environmental Protection Agency (EPA), green chemistry, also known as sustainable chemistry, is the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances. Green chemistry applies across the life cycle of a chemical product, including its design, manufacture, and use. EPA reports that green chemistry technologies provide a number of benefits, including reduced waste; safer products; reduced use of energy and resources; and improved competitiveness of chemical manufacturers and their customers. In addition, EPA advises that green chemistry is a highly effective approach to pollution prevention because it applies innovative scientific solutions to real-world environmental situations.

The 12 Principles of Green Chemistry, originally published by Paul Anastas and John Warner in *Green Chemistry: Theory and Practice* (Oxford University Press: New York, 1998), provide a roadmap for chemists to implement green chemistry. According to EPA, these principles are as follows:

- it is better to prevent waste than to treat or clean up waste after it has been created;
- synthetic methods should be designed to maximize the incorporation of all materials used in the process into the final product;
- wherever practicable, synthetic methods should be designed to use and generate substances that possess little or no toxicity to human health and the environment;
- chemical products should be designed to effect their desired function while minimizing their toxicity;

- the use of auxiliary substances (*e.g.*, solvents, separation agents, etc.) should be made unnecessary wherever possible and innocuous when used;
- energy requirements of chemical processes should be recognized for their environmental and economic impacts and should be minimized, and if possible, synthetic methods should be conducted at ambient temperature and pressure;
- a raw material or feedstock should be renewable rather than depleting whenever technically and economically practicable;
- unnecessary derivatization (use of blocking groups, protection/deprotection, temporary modification of physical/chemical processes) should be minimized or avoided if possible, because such steps require additional reagents and can generate waste;
- catalytic reagents are superior to stoichiometric reagents;
- chemical products should be designed so that at the end of their function they break down into innocuous degradation products and do not persist in the environment;
- analytic methodologies need to be further developed to allow for real-time, in-process monitoring and control prior to the formation of hazardous substances; and
- substances and the form of a substance used in a chemical process should be chosen to minimize the potential for chemical accidents, including releases, explosions, and fires.

A number of State and federal laws are designed to regulate the transportation, disposal, and exposure to hazardous and toxic substances. Generally, states assist in the implementation of a regulatory regime under authority delegated by EPA in order to carry out these comprehensive solid waste, hazardous substances, and toxic materials laws. While EPA and the State administer certain incentive-based and voluntary initiatives designed to influence industrial policies in a manner that encourages the adoption of environmentally friendly manufacturing processes or products, in the areas of hazardous waste and toxic substances law, traditional regulatory controls predominate.

However, Maryland administers several environmental and economic programs designed to promote sustainability in industrial processes. For example, in order to encourage recycling of electronic devices, State law encourages and incentivizes manufacturers to establish product take-back and recycling programs. Also, to reduce public exposure to mercury, State law requires vehicle manufacturers to submit mercury minimization plans to the Maryland Department of the Environment.

State Expenditures: Due to the complexity of the subject matter and the technical nature of the various duties required to be studied by the task force, DBED is not able to implement the bill with current staff and existing resources. Thus, general fund

expenditures increase by about \$50,000 in fiscal 2012 and 2013 for DBED to contract with a private consultant with expertise in green chemistry. DBED advises that the reimbursement expenses can be handled with existing budgeted resources.

Additional Information

Prior Introductions: None.

Cross File: None.

Information Source(s): Department of Business and Economic Development, U.S. Environmental Protection Agency, Department of Legislative Services

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