

### **Automobile Air Bag Study**

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Type: Open-ended Problem  
Student Time: Two weeks  
Location: In class and take home

### **Summary**

The goal of this problem is to introduce engineering students to the use of regulations and/or standards, media influence, and product liability issues in engineering design. This problem deals specifically with the recent media interest and government revision of the use of automobile air bags. The students are asked to research the Federal Safety Standards; statistical data on fatalities versus lives saved; and the media, congressional, and National Transportation Safety Board activities regarding automobile air bags. They are then asked to discuss the current Department of Transportation policies regarding the ability of individual automobile owners to disconnect air bags in light of potential legal cases involving accidents where the air bags have been disconnected.

### **ABET Descriptors**

Engr Sci Content: First Year Engineering  
Type: System  
Elements: Establish objectives, establish criteria, synthesis, analysis, evaluation  
Features: Creativity, open-ended, formulate problem statement, feasibility, production, design description  
Constraints: Economic, safety, ethics, resources, time, regulations, performance, human factors  
Effort: Individual or small teams

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Over the past few years there has been a great deal of discussion in the media and Congress of the problem of small children and adults being killed by automobile air bags. You are to: 1) define the problem, 2) research and summarize the Federal Safety Standards and patents dealing with automobile air bags, 3) collect and analyze data for the year 1996 on deaths and lives saved per 100,000 miles of travel by automobile in the contiguous United States of America, 4) review and summarize media, Department of Transportation, National Transportation Safety Board, and Congressional articles, directives, public statements, and hearings; 5) discuss the legal implications of changes in the Federal and State Standards, Regulations, Directives, etc.; and 6) summarize the above in a paper of less than five (5) pages.

Specifically you must address the legal dilemma faced by a driver in deciding whether or not s/he should have the air bags in their automobile disconnected. You are to define the problem, analyze the data, find and review the applicable standards and regulations, discuss the legal ramifications, and make recommendations for actions by government agencies and individual automobile owners.

At first, this problem may not seem to be an engineering design problem. However, this assignment illustrates regulatory and product liability issues which are commonly confronted by engineers in a number of industries. The design and use of many products are constrained by regulations, standards, patent law and product liability issues. In some cases, the decision making process (design always requires decisions) is further complicated by the media which may introduce erroneous or biased data into the decision process.

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### **Engineering Notes:**

The National Transportation Safety Board decision to allow individual automobile owners to have air bags disconnected raises serious product liability and safety issues. Who is legally liable when the owner has the air bag disconnected? Are air bags safer than seat belts? What has the media effect on the debate been?

Engineers are involved not only in the development and design of products, they are also involved in the regulatory and legal decisions regarding the safety, reliability, etc. of new technology. However, there may be “detrimental effects” involved in our technology. Engineers need to be aware of these issues and know how to determine their effect on design processes and decisions.

### **Objectives/comments:**

- Require the students to research regulations, safety standards, patent information
- Provide a forum for discussing a current (1997) issue being debated in the media

### **Expected outcome:**

- Essay on the issues and recommendations to resolve an open-ended engineering problem

### **Discussion/follow-on activities:**

Many product designs are constrained by government standards and/or regulations. A synergistic relationship could be developed between this open-ended problem by bringing the regulatory and product liability issues into other engineering courses such as Materials Science and Capstone Design where these issues are important.