THE SAFETY OFFICE… DISCOVERY'S BEST FISHING HOLE

Captain M. P. "Pappy" Papadakis JD ©

Trial lawyers involved with product liability cases are always faced with a defect that manifested itself as an actionable lack of safety. Trial Lawyers involved in product accident litigation always want to find out certain safety and defect information.

What the manufacturer knew.

When they first knew it.

What they should have known.

When they could have first known about it.

…and What they did armed with the notice.

This information all resides in the company's safety office.

INTRODUCTION

Corporate management dislikes the words "trouble" and "problems" They love the words "efficient", "productive" and "profitable". "Safe" is a word that management likes when it applies to their product. Management expects safety to happen, but they do not like to pay a high price for it.

A safety office in today's technical world concerns itself with far more than plant safety. Safety attaches to the product even as a new product design is conceptualized. This is particularly true in aviation where system safety is a government mandate and a corporate reality. System safety has come to realize that the best way to apply safety to a product is to design the widget as defect free as possible. This means that, even as the product is a paper design, safety engineers are designing safety into every aspect of the concept. Next mockups are built and safety tests the concept theory for safety flaws. As proto types are created and tested safety deficiencies are noted and corrected.

After production has begun safety fixes are incorporated as new defects are discovered and corrected -hopefully, before the widget gets to the field. If the product reaches the field and a defect is discovered, it is fixed through either retrofit kits or by product recall. The least effective way to fix a defect is by warning of the defect. A warning is proof a defect exists that was not caught and corrected during manufacture. Manufacturers do not warn of defect free products. The Safety Office Has Tools to Predict Defect.

1

There are Lessons Learned Studies that show problems in design of earlier widgets of similar design. The manufacturer should not only study his own earlier designs, but also keep abreast of the competition's widgets as well. Lessons Learned also encompasses following your widget in the field and monitoring its field usage history. This is useful to see if System Safety predictions are correct as to failure rates, Failure Mean time between failures, Severity of the failure and design veracity.

System Safety is required to do a variety of studies that may include:

Failure Modes Analysis- an analysis that tries to examine every imaginable way a product may fail. Imagine as complex a system as a car or simply a component of a car such as the cars braking system. In total there are thousands of predictable failure modes for such a complex system.

Failure Modes Severity Analysis: another study suggests that after a potential failure mode is identified, it can be assigned a severity code to categorize how deadly or benign a particular failure mode is.

The standard suggests a category L (one) failure may result in destruction of the Widget and or death of the occupant A Cat I(one) hazard is supposed to be fixed with haste. (The Challenger Space Shuttle accident was launched with a known Cat I hazard in the poor 0 ring design which resulted in mission loss Vehicle loss and loss of seven lives.)

Category I. (one) failure may result in destruction of the Widget and or death of the occupant

Category II. (two) failures render the widget incapable of performing its mission and

Category III. (three) failures render a portion of the vehicle incapable of doing its mission while the remaining widget performs at a diminished capacity

Category IV. (four) failures suggest routine maintenance need be applied later.

Failure Modes Probability of Occurrence, (Failure Rate Predictions) Not only is the safety office expected to predict every type of failure imaginable, and how severe the result will be it must also attempt to determine how often such a failure mode will occur. if the event is frequent and the severity large, then something should be done to create a redundancy or to create a fail-safe design.

Failure Mode and Effects Studies (sometimes-called Cause and Effect studies) The previously identified failure mode is assumed to have occurred and the resulting failure is analyzed to see what overall effect it has on the system. It is true that such an analysis may concern itself with conditions the widget is undergoing at the time of the failure .The result can be very different

As an example the failure of an aircrafts primary flight instrument may have no serious effect if it occurs in daylight and in good weather. Aircraft lighting failures have no effect in daylight and this is far different result at night A failure mode and effects study assumes a failure occurs and then analyses what the results might be.

Fault Tree Analysis. This is a System Safety tool.It is a graphical means of suggesting what result a failure of a component will have on the downstream system as a whole.

For instance a failure of the main Attitude and Direction Indicator would have no effect on F-16 safety in daylight and in good weather (visual fight conditions.) It would affect the mission to some extent if the failure was in the gyro itself and not simply the indicator. In bad weather or at night loss of the ADI could cause a category 1 Mishap with loss of aircraft or loss of pilot's life.

A rule of system design is that unless the chance of a single failure causing a category I mishap is extremely remote the CAT One potential must be controlled by every available means. In the early F-16 the redundant addition of a self –battery contained standby attitude indicator was supposed to be sufficient for safe instrument flight.

Common Cause Failure Analysis: Another tool of the system safety trade is to look for common cause failure modes. For instance hydraulic contamination or oil contamination in mechanical systems can cause multiple failure modes.

In vulnerability studies systems are looked at to see whether outside influences can cause single or multiple common cause failures. Early A-7 aircraft had both hydraulic systems routed close to one another and ground fire could destroy both too easily. The DC-lO routed all hydraulic systems under a floorboard that did collapse on a Turkish Airliners DC-lO near Paris.

SAFETY HAS A DUTY

You can see that a manufacturers Safety office has a duty to use every tool in its arsenal to visualize and prevent serious defect from manifesting itself during conceptualization, design, prototyping and mass manufacture of a new widget

Their duty does not end there. Usually, the Safety Office is mandated to track the product in the field, and to monitor field usage histories. In aviation such safety monitoring is accomplished through active:
1. Technical representatives in the field
2. Warranty work at maintenance stations
3. Maintenance work- non warranty
4. FAA voluntary Malfunction reporting and Service Difficulty Reporting
5. Incident investigations
6. Accident Investigations
7. Complaint and suggestion letters
8. Mean Time between failure ongoing studies.
9. System Safety Study updates
10. Independent Review studies of worrisome problems.

Often a manufacture is required to update his earlier Crystal Ball prediction studies to ascertain how the product in the field is actually performing. Often manufacturers undertake this for there own benefit and knowledge. If there is a vast difference between prediction and the real world there is a problem that needs attention.

A healthy safety system has its hand on the widgets pulse, and is constantly updating the data to have a continual knowledge of how the product is performing.
Safety then has a responsibility to see that information gained about product performance is correctly and actively disseminated in a timely fashion to managers with authority to react and correct such bad news.

The safety department must have unfettered access to the highest level of management, The chain of safety data dissemination can pass through no one wearing a hat other than safety. Safety information must reach management levels capable of correcting problems before others can defuse and change the message. Without unfettered access to top management, safety is a word with no meaning, a dog with bark but no bite. Safety too often is relegated to blowing smoke in an unfavorable wind.

Safety has the duty to understand, to warn, and to recommend changes sufficient to lower discovered risks to routine and acceptable proportion.

CHANGES

Changes to a product are initiated by many means. They are usually called Engineering Change Proposals in the early stages. Such change proposal may be initiated in house or may be initiated by a large purchaser of a widget such a change proposal results in a studies of feasibility, safety and economy. A variation of a cost effective study is completed to include input from the

Safety Office. Thereafter, disapproved proposals are archived, and approved changes are funded and implemented.

Often an attorney is advised to study the not approved file of proposed changes to a widget. Often you may find a technically feasible, economically viable idea that would enhance Safety while not detracting from utility lying around in some dead file. This may make your case concerning the existence of suitable safe alternative designs.

Change proposals often give the reason a change is being proposed or initiated. Companies often hide from admitting safety deficiencies by calling the change proposal a "Product Improvement ECP" rather than calling it an "ECP to correct a Safety Deficiency" Indeed many are product improvements precisely because implementation will enhance product safety. Many times companies reserve the words "ECP to correct product deficiencies" for ECPs that come from an outside source such as the FAA or buyers who have discovered defect.

NOW WHAT

We attorneys have been shown that the office with responsibility to see that a widget is designed defect free is the safety office, Moreover; it is the safety office that is involved with safety aspects of a new widget as it is designed, tested and mass manufactured. The safety office is responsible for safety monitoring in the field if a field problem is discerned safety is usually involved in making recommendations of how to fix the widget and how to control unacceptable risks.

The Law as it Relates to Products.

A manufacturer has the duty to create a product that does not create an unreasonable risk of harm. An aspect of a product may be defectively dangerous in marketing, in manufacture or in design. The test of such defectiveness varies but a product is usually defective when the risk of its usage outweighs the utility derived from its usage.

Now the defect is what we complain of- not the overall product. An early Ford Pinto was defective in its Gas tank filler cap design- and the utility was not of the vehicle- but the focus was on the utility of the gas filler neck and cap.

Generally you decide a product is designed defectively if an aspect of the design causes an unreasonable risk of harm to a foreseeable user.
Here is the general test for defectiveness. Does an aspect of the design cause an unreasonable risk of harm. At the time of manufacture was an alternate

design technically feasible? At the time of manufacture was the cost of an alternate design economically acceptable? (Not prohibitive)
Would the alternative design enhance the product safety?
Would the alternative design do nothing to harm product utility?

If you can answer each of the above questions affirmatively you probably can show a product was defective from a Risk vs. Utility standpoint.

SAFETY'S DILEMA

Many manufacturers have management that is motivated by marketing and consider safety an impediment to profit this is especially true after a product has reached the marketplace and it is then shown to be a lemon.
Ask yourself these questions. Who helped design the widget? Who gave thumbs up to the widget from a safety standpoint? Who first had corporate knowledge of the widget's safety problems in the field? Who should not have allowed the safety problem to occur in the first place?

Once a "T' word or a "P" word reaches management, there are two ways to fix the trouble or problem. The forward thinking companies, with a healthy safety program, will mobilize immediately with men and material to rectify the mistake. The backward thinking manufacturer opts for the arrogant and ultimately destructive CYA mode that requires implementation of the 3D Principle of "Deny -Delay -Disclaim"

Embarkation of such a 3D program requires management to tell safety that they should revise history and show that the products risk is over estimated, safety is called upon to minimize and rationalize the risk on paper not in actuality. This happens far more often than one would like to believe. When it does almost invariably the safety office has both the first truth and later revisionist documentation.

The simple truth is that companies are far too large to destroy or change documentation efficiently. There is always someone with knowledge of such revisionist data The truth is that safety professionals have dedicated their lives to safety concepts and being told to do wrong by management is often not well tolerated.
Thus, I suggest initiating your discovery in the safety department.
    l .They are mandated top design a safe product
    2. They are mandated to discover what is wrong with their product from a safety standpoint.
    3. They are mandated to tell management what problems they have found about their product.
    4. They are the first to be told by management to cover up (downplay) a defect.
    5. Documents needed to win your case reside in the safety office.

6. An inordinate number of whistleblowers reside in the safety office.

The Safety Office is the Key

Safety is a win —win situation for a trial lawyer. Every large company involved in mass production of Aviation Equipment or aircraft should have an independent safety office.
If they do not have such an office the implication is they are negligent.
If the safety office is not independent and if it has other duties it is ill designed and the implication is that it is negligent.
If safety does not have unfettered access to the highest levels of management, the safety department is ill designed and the implication is that it is negligent.
Trial lawyers involved with product liability cases are always faced with a defect that manifested itself as an actionable lack of safety. Trial Lawyers involved in product accident litigation always want to find out certain safety and defect information.

What the manufacturer know?
When they first knew it?
What they should have known.
When they could have first known about it.
This information all resides in the company's safety office.

ABOUT THE AUTHOR

Myron Papadakis is a mechanical engineer from The University of Nebraska. He is a 1974 law graduate of STCL He taught Aviation Law and Product Law as an adjunct professor of law at STCL from 1979 through 2014. He has authored two legal reference textbooks "Aircraft Accident Reconstruction and Litigation"4th edition, Land J Publishing Co., 2003 and" Civil Trial Practice -Winning Techniques of Successful Attorneys". L and J Publishing Co., 2000.
He has consulted, evaluated, investigate and/or helped litigate over 450 aviation accident cases.