

# The Product Safety Newsletter

Vol 1, No 9

November-December 1988

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## Chairman's Message

In a previous newsletter, I mentioned that we are working with the IEEE EMC Society to develop the details of our organizational structure and formalize our statement of scope. Work in both of these areas is continuing. At this point, a draft of our scope, a statement of technical competence (identifying our areas of expertise), and an organizational chart have been prepared. By the time you read this, all of these items should be finalized and ready for publication in the next newsletter. (It's still early October as I prepare this message.)

The thrust of our original charter, to advance the knowledge and awareness of product safety of electronic products, will not change. We are still dedicated to this philosophy. The statement of technical competence will also reflect this thought.

An organization chart depicting our structure and relationship to

the EMC Society and IEEE is shown on the following page. We are presently identifying the officers and functional chairmen at the national level. Your area chairmen are doing the same at the local level.

Thus far, we have identified the following positions and volunteers to fill those positions:

### **National Officers:**

*Chairman*

Richard Pescatore

*Vice Chairman*

Jim Norgaard

*Secretary/Treasurer*

John McBain

### **Functional Positions:**

*Newsletter Editor*

Roger Volgstadt

*Paper Review Chairman*

Mike Harris

*Symposium Liaison Chairman*

TBD

*Symposium Liaison Chairman*

TBD

As you can see, we still need volunteers to help with some of the Technical Committee functions. These positions are critical to the success of our organization. We also need people to help in each area. Please let one of the officers know which functional area you would like to help with or chair. Their addresses and phone numbers are given on page 19 of this newsletter.

The success of this Technical Committee depends on you. In addition to organizing the functions mentioned above, we want technical papers to publish. These papers can take on one of several forms: abstracts, transactions, letters to the editor of the "IEEE Transactions," short papers, long papers, etc. Also, we anticipate that we will be able to have papers and tutorials presented at future EMC Society Symposiums.

Continued on page 2

# The Product Safety Newsletter

Vol. 1, No. 9 November/December 1988

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(408) 748-2137

This newsletter is prepared by the Corporate Graphics Group of Tandem Computers Incorporated. The editor wishes to extend a special tahnks to Melanie Bell, Annie Valva and Jodi Elgin of Tandom Computers for their work in preparing this newsletter.

*Editor*  
Roger Volgstadt  
*News Editor*  
David Edmunds  
*Technical Editor*  
John Reynolds

## Chairman's Message

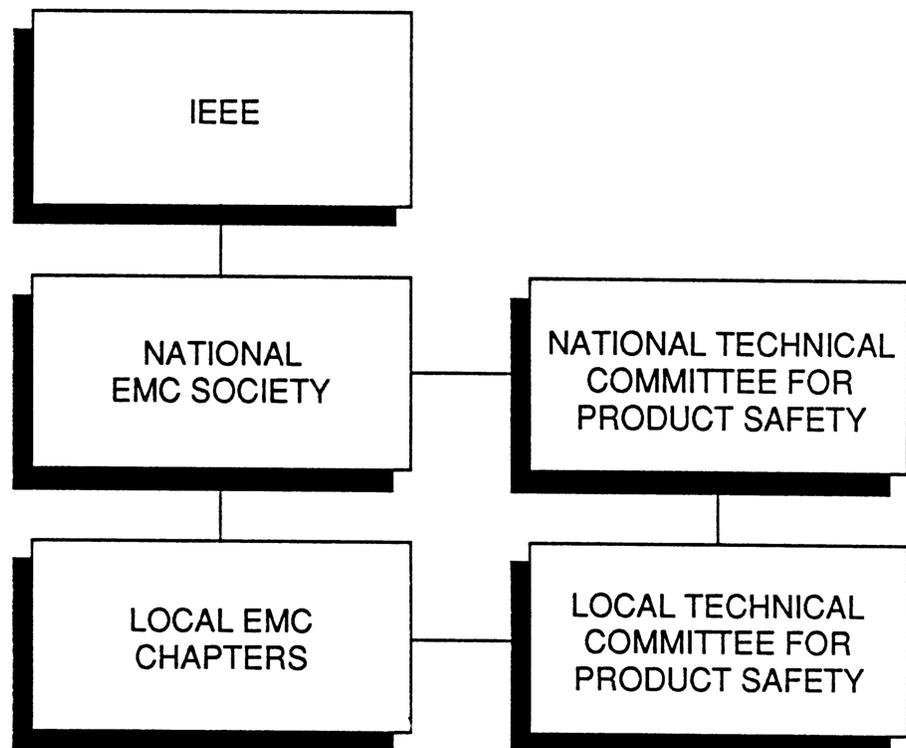
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I hope that this article brings you up to date regarding our progress of affiliation with the IEEE. Unfortunately, space does not permit a more detailed report. However, if you have any questions, please feel free to contact me.

Any thoughts or ideas that you might have are always welcome. Have a Happy Thanksgiving and Holiday Season.

Rich Pescatore, *Chairman*

## ORGANIZATION



# Technically Speaking

Rich Nute

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## The Hazards of Multiple Grounding

*Hello from Vancouver, USA.*

One of my colleagues has a desk drawer full of I/O boards that have been burned quite severely. Why did they burn? The I/O boards are in energy-limited SELV circuits. There should be no possibility of fire.

When we closely examine the boards, we find that the ground trace from the I/O connector is the trace that was overheated. It can only overheat when it conducts lots of amps. But, we all know that the ground is not a current-carrying conductor. At least, it is not a current-carrying conductor under normal conditions.

How can the trace overheat when there is no current?

There must have been a fault condition. Can we determine what it was?

When we check out the circuit with an ohmmeter and a voltmeter, we find everything is okay: zero ohms, and zero volts.

My colleague performed the traditional grounding continuity test using a 30-amp source. It passed.

Well, my colleague went a step further. He attempted to duplicate the failure with a new board. He kept cranking up the current until the board burned just as his drawerful of boards. It took 100 amps!

There is no way to get 100 amps through a 120 volt cord-connected product on a 20 amp branch circuit.

The board did burn. It did take 100 amps to bum the board. Those 100 amps had to come from somewhere.

Before we explore this, let's turn to a different phenomenon.

Have you ever measured the potential difference between the neutral and the ground? You probably measured a couple of volts.

To get a few volts potential difference, there must be a few amps of current passing through a resistance, somewhere.

Since the ground has no current, the current must be in the neutral. When we make this measurement, the ground wire acts as a remote contact to the end of the neutral wire. So, we are measuring the voltage drop across some portion of the neutral conductor.

Now, let's return to the original issue: How can current get into the ground under normal conditions? Normal conditions are the only conditions in which we can get continuous current in the ground conductor.

The answer is found in the *National Electrical Code Handbook*.

One neutral may be grounded at more than one point! See Figures 250-7 and 250-8 (pages 193 and 194 of the 1987 *Handbook*) and Figures 1 & 2 on the next page.

*What does this mean?*

If the neutral is connected to ground at more than one point, then the neutral and ground are connected in parallel between those two points. In accordance with Kirchoff's laws, such connection makes the ground a current-carrying conductor under normal conditions!

*What does this mean for the I/O board?*

The I/O includes a signal ground. When the I/O is connected to another piece of equipment which is grounded at another location, then the signal ground wire, because it is grounded at two points, parallels the ground and neutral wire!

Thus, the neutral current gets divided into three paths: the neutral wire, the ground wire, AND the signal ground! VOILA! Lots of amps in the signal ground wire! The  $I^2R$  causes the traces on the boards to bum.

Depending on the distribution transformer size, the distance

Continued

between I/O ports, and wire sizes and lengths, it is indeed within the realm of possibility to have 100 amps in the signal ground wire!

And, we have a fire hazard.

Two or more neutral ground points necessarily connect the ground in parallel with the neutral. Signal grounds are always in parallel with the ground. Whenever the neutral is grounded at two or more points, the signal ground between two points, especially remotely located units, may be in parallel with the neutral. When this occurs, some portion of the neutral current will be in the signal ground. If the neutral current is high enough, it can cause overheating on the I/O board.

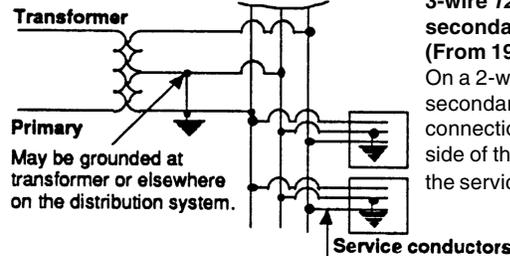
*What can be done to prevent this situation?*

In order for a grounding conductor to not be a current-carrying conductor in parallel with the neutral, the neutral must be limited to one grounding connection.

Fortunately, single point grounding is permitted by both the NEC and the CEC (see Figure 3 and 4).

Your comments on this article are welcome. Please address your comments to the *Editor, c/o Tandem Computers, Product Safety Newsletter, 2550 Walsh Ave., Santa Clara, CA 95051-1392.*

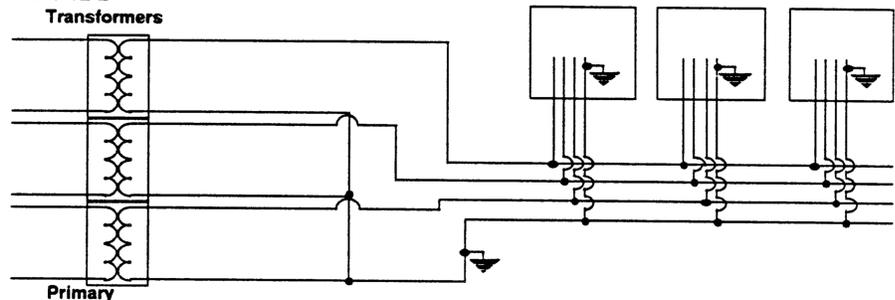
**FIGURE 1**



**3-wire 120/240-VAC single-phase secondary distribution system (From 1987 NEC, Fig. 250-7.)**

On a 2-wire or 3-wire single-phase ac secondary distribution system, grounding connections are made on the secondary side of the transformer and on the side of the service disconnecting means.

**FIGURE 2**



**4-wire, 3-phase 208Y/120-V secondary distribution system (From 1987 NEC, Fig. 250-8.)**

The neutral is grounded at each service and also on the secondary side of the transformer on this 4-wire, 3-phase, 208Y/120-V secondary distribution system. When 3-wire, 3-phase service equipment is installed for power purposes on this type of ac system, the grounded (neutral) conductor is required to be run to the service equipment.

**FIGURE 3**

**C. Location of System Grounding Connections (From NEC Article 250-21.)**

**250-21. Objectionable Current over Grounding Conductors**

a. Arrangement to Prevent Objectionable Current The grounding of electric systems, circuit conductors, surge arrestors, and conductive noncurrent-carrying materials and equipment shall be installed and arranged in a manner that will prevent an objectionable flow of current over the grounding conductors or grounding paths.

b. Alterations to Stop Objectionable Current If the use of multiple grounding connections results in an objectionable flow current, one or more of the following alterations shall be made:

1. Discontinue one or more such grounding connections.
2. Change the locations of the grounding connections.
3. Interrupt the continuity of the conductor or conductive path interconnecting the grounding connections.
4. Take other suitable remedial action satisfactory to the authority having jurisdiction.

**FIGURE 4**

**Grounding Connections for Systems and Circuits (From CEC Section 10-200.)**

**10-200 Current Over Grounding and Bonding Conductors**

1. Where wiring systems, circuits, electrical equipment, arrestors, cable armour, conduit, and other metal raceways are grounded as a protective measure, the grounding shall be arranged so that there is no objectionable passage of current over the grounding conductors.

2. The temporary currents which are set up under accidental conditions while the grounding conductors are performing their intended protective functions shall not be considered as objectionable.

3. Where through the use of multiple grounds an objectionable flow of current occurs over the grounding conductor,

- a. One or more of the grounds shall be abandoned; or
- b. The location of the grounds shall be changed; or
- c. The continuity of the conductor between the grounding connections shall be suitably interrupted; or
- d. Other effective action shall be taken to limit the current.

# Hierarchy of Safety Standards

Peter E. Perkins, P.E., Manager

Corporate Product Safety and Regulatory Affairs Tektronix, Inc.

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*This article is an overview of the Hierarchy of Safety Standards in three Safety agencies. Understanding how Standards interrelate within an organization will provide the safety engineer a better concept of how each agency evaluates a product.*

## **Does a Hierarchy of Standards Exist?**

Today there is quite a bit of confusion regarding the relationship between end product and component standards issued by the IEC, CSA and UL. Is each standard independent? When should any of these standards be used? There seems to be some relationship between the standards, but what is that relationship? When do the component requirements apply and when don't they?

It seems that the laws of physics should lead us to a single set of requirements. These would be based on a sound technical foundation, applicable across a broad line of electrical equipment. The requirements for protection would be the same in every case; no fire or electric shock should occur.

The system could work by clearly identifying the inherent safety requirements at each level. This identification of requirements would run from basic materials through components to the end products. It would appropriately assign the protection needed to meet the requirements for the

application. This system would simplify the process of evaluating the finished equipment in its installation and would aid inspection and certification by the regulatory bodies. They could identify safety aspects as they apply to a component piece or complete product.

Another point is that this system would give the material or component industries a say in developing the standard applicable to the end product. It would also insure that the component requirements would agree with the product requirements, since they would be built upon the same technical considerations.

We see this approach being used today to some degree by the various standards writing bodies. But it is not always clear which standards will be invoked in every case. Sometimes there is a surprise. Let's examine three sets of standards to see how they are organized.

## **The IEC Standards**

The IEC has the most formal system of organization of standards hierarchy. It is explicitly described in IEC Guide 104. The stated goals are:

- To ensure consistency of IEC Standards in common areas and to avoid contradictory requirements.
- To reduce the volume of IEC Standards and to save printing costs.

- To improve engineering understanding across technical disciplines.
- To improve coherency of the IEC Standards system.

There are two types of component standards in the IEC: Group safety standards and Basic safety standards. The IEC Advisory Committee on Safety (ACOS) assigns responsibility for Group safety or Pilot safety functions to various IEC technical committees. The resulting standards may be referred to by many end product standards. Let's look at the two types of component standards.

## **Group Safety Standards**

These are standards that apply to one or more product areas. Both the technical committee and the IEC standard are listed.

Presently the list of Group safety standards includes:

- SC12B/IEC65: Safety requirements for mains operated electronic and related apparatus for household and similar general use.
  - SC14D/IEC742: Isolating transformers and safety isolating transformer requirements.
  - SC23F/IEC685: Connecting devices for household and similar fixed electrical installations.
  - SC66E: General safety requirements for measuring, control and associated equipment (in preparation).
- Continued

# Hierarchy of Safety Standards

Continued

## Basic Safety Standards

Developed by Pilot committees, these standards deal with a specific basic safety aspect (characteristic) which applies to most types of electrotechnical products.

Currently the list of Basic safety standards includes:

- SC15A/IEC 112: Method for determining the comparative and the proof tracking indices for solid insulation materials under moist conditions.
- SC15A/IEC 587: Test method for evaluating resistance to tracking and erosion of electrical insulating materials used under severe ambient conditions.

- TC16/IEC 73: Colors of indicator lights and push-buttons.
- TC16/IEC 446: Identification of insulated and bare conductors by colors.
- TC16/IEC 447: Standard direction of movement for actuators which control the operation of electrical apparatus.
- TC16/IEC 757: Code for designation of colors.
- SC28A/IEC 664, 664A: Insulation coordination within low-voltage systems including clearances and creepage distances in equipment.
- SC50D/IEC 695: Fire hazard testing.

IEC 695-1 Part 1: Guidance for the preparation of requirements and test specifications for assessing fire hazard of electro-technical products.

IEC 695-1-1: General guidance.

IEC 695-1-2: Guidance for electronic components.

IEC 695-2, Part 2: Test methods.

IEC 695-2-1: Glow-wire test and guidance.

IEC 695-2-2: Needle-flame test

IEC 695-3, Part 3: Examples of fire hazard assessment procedures and interpretation of results.

## HIERARCHY OF IEC SAFETY STANDARDS

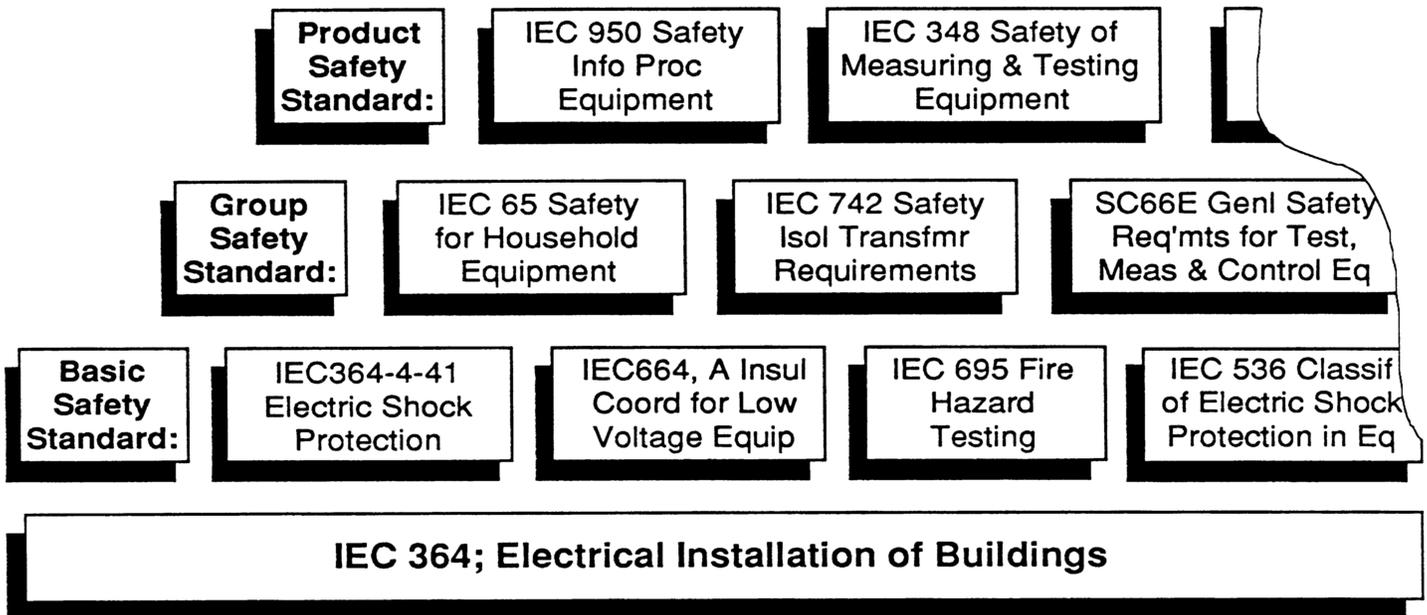


FIGURE 1

# Hierarchy of Safety Standards

Continued

- IEC 695-3-1: Combustion characteristics and survey of test methods for their determination.

TC64/IEC 364-4-41: Electrical installations of buildings; Part 4: Protection for safety; Chapter 41: Protection against electric shock.

IEC 364-5-54, Part 5: Selection and erection of electrical equipment. Chapter 54: Earthing arrangements and protective conductors.

TC64/IEC 449: Voltage bands for electrical installations of buildings.

TC64/IEC 479: Effects of current passing through the human body.

TC64/IEC 536: Classification of electrical and electronic equipment with regard to protection against electric shock.

TC70/IEC 529: Classification of degrees of protection provided by enclosures.

TC7 4/WG5 : Methods of measurement of leakage current (in publication).

TC77: Electromagnetic compatibility between electrical equipment including networks—future publication.

The majority of these standards are available together in the IEC publication, IEC Safety Handbook-Containing All IEC Basic

Safety Standards, First Edition, 1985. (It is available either directly from the IEC in Geneva or from ANSI.) The IEC has done a good job in bringing together this collection of requirements in order to explain their system of standards. This book is essential for anyone working on standards development or certifying products to IEC requirements.

## The CSA Standards

CSA has made a strong effort to have a consistent set of basic requirements. This is shown by reference to basic standards in

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## HIERARCHY OF CSA STANDARDS

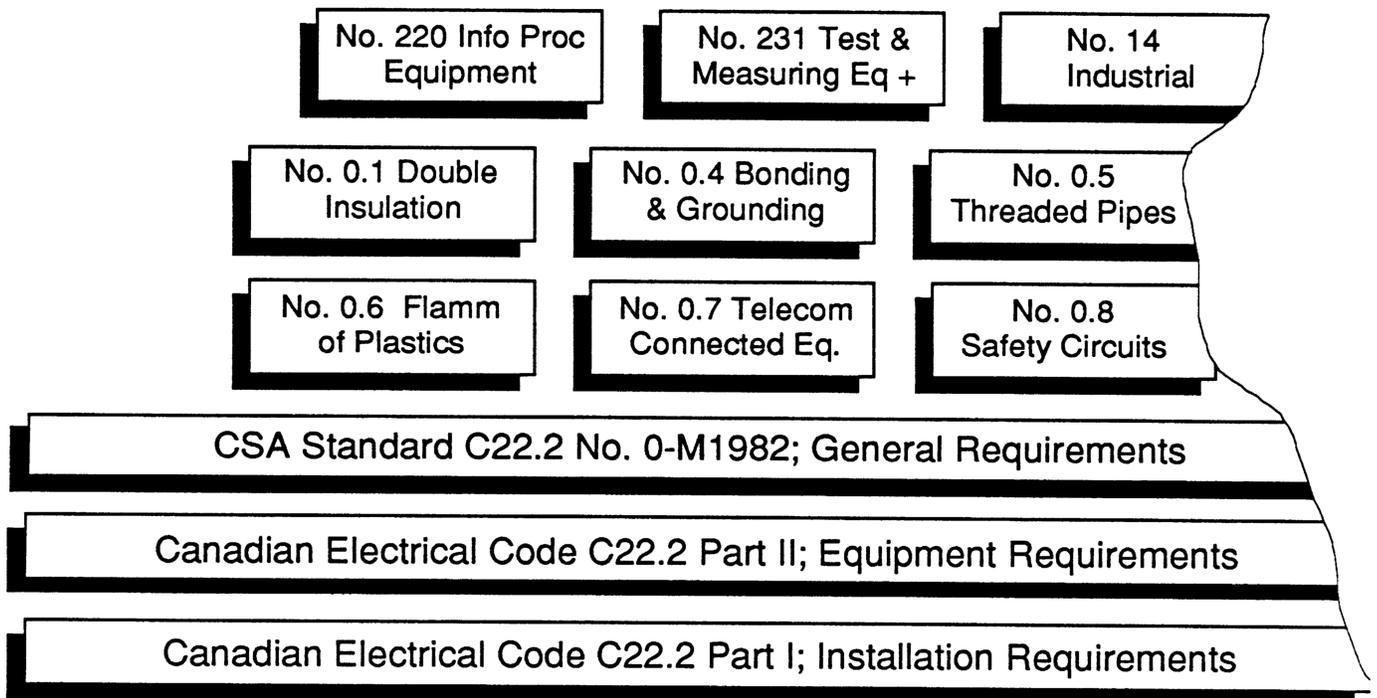


FIGURE 2

# Hierarchy of Safety Standards

Continued

many end product standards. The goal is to unify requirements. Standards committees may adopt requirements other than those in basic standards but must provide a technical justification to the standards Steering Committee. The role of this committee and the Standards Administrator is to encourage reference to the basic standards rather than repeating the requirements in each standard (see Figure 2).

The Canadian Electrical Code (CEC) C22.2 requirements underlie all the CSA electrical standards.

C22.2 Part I covers all of the permanent installation plus maintenance of electrical equipment.

C22.2 Part II covers the construction, testing and marking of electrical equipment. Part II serves as a framework for individual standards, both basic and product oriented. From No. O-M1982 General requirements—CEC, Part II, article II: “This standard shall form a part of, and be read in conjunction with, all individual standards... Individual standards contain only the special requirements applicable to the equipment that they cover.”

Included under Part II is the O.x series, which applies broadly across equipment lines. These basic requirements are set out separately to minimize repeating them in each component or product standard.

No. 0.1-M1985

General requirements for double insulated equipment.

No. 0.3-M1985

Test methods for electrical wires and cables.

No.0.4-M1982

Bonding and grounding of electrical equipment.

No. 0.5-1982

Treaded conduit entries.

No. 0.6-M1982

Flammability testing of polymeric materials.

No. 0.7-M1985

Equipment electrically connected to a telecommunications network.

No. 0.8-M1986

Safety functions incorporating electronic technology.

No. 0.11-M1985

Classification of polymeric compounds.

No. 0.12

Wiring space and wire bending space in enclosures for equipment rated 750 V or less.

The many electrical equipment standards are also a subset of the Canadian Electric Code. Many of us are familiar with the standard C22.2 No.220 Safety of Information Processing Equipment. CSA is now attempting to harmonize these requirements with the IEC requirements in IEC 950.

Harmonization of requirements with the IEC is a new direction for CSA.

## The UL Standards

The UL system seems to be the least organized of the three systems examined. There is no long-standing formal policy aimed at the development or use of a hierarchical system of standards. However, there has been some recent commitment to use basic requirements in a fairly universal way. UL already uses some specific standards (e.g., UL 746 Plastics and UL 796 Circuit Boards) that apply rather universally. UL also recognizes the difficulty of keeping changing requirements up to date if they appear in many different standards. They would like to use the most recent requirements in evaluating products, so the trend in using basic standards is likely to continue.

The present hierarchical arrangement is not always apparent to all product safety engineers, but they would agree that it is accurate. The following examples are organized from basic requirements upward to product requirements (refer to Figure 3).

### *Fundamental Requirements:*

UL 94 Plastics Flammability

UL 746 Plastic Materials

UL 840 Creepage & Clearance

UL 1097 Double Insulation

Continued

# Hierarchy of Safety Standards

Continued

*Component Requirements:*  
 UL 796 Circuit Boards  
 UL 1283 EMI Filters  
 UL 1411 Transformers  
 Other Component Requirements  
*Subassembly Requirements:*  
 UL 1012 Power Supply  
 Requirements  
*Product Requirements:*  
 UL 478 EDP Equipment  
 UL 1244 Test and Measurement  
 Equipment  
 Other commercial and industrial  
 electronic equipment standards.

UL has begun to list some of the component standards and fundamental standards in an appendix to some standards. (UL 478 has such an appendix.) This listing

intends to remove surprises when these standards are referenced by UL engineers during their investigation of the product.

On the other hand, UL has mixed the telecom requirements throughout the proposed UL 1459 Telephone Equipment standard. Equipment designed and certified to other standards, e.g., UL 478 EDP Equipment, will be accepted providing it meets the special telephone requirements. This creates a lot of work in isolating the special telephone requirements from the others given in the standard. (CSA has done a better job in that they have isolated their telecom requirements in a separate standard.)

## What Does It All Mean?

There is both an opportunity and a danger here. The IEC has recognized the need for fundamental requirements to be laid out by themselves. They are aggressively pursuing this system. If we in North America wish to be very influential within the worldwide scheme, we should have our technical requirements set out in a similar manner. If we can't organize that way, we'll always be working to catch up with the IEC to get our practice considered in those standards.

Some feel uncomfortable with this scheme, feeling it is too

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## HIERARCHY OF UL SAFETY STANDARDS

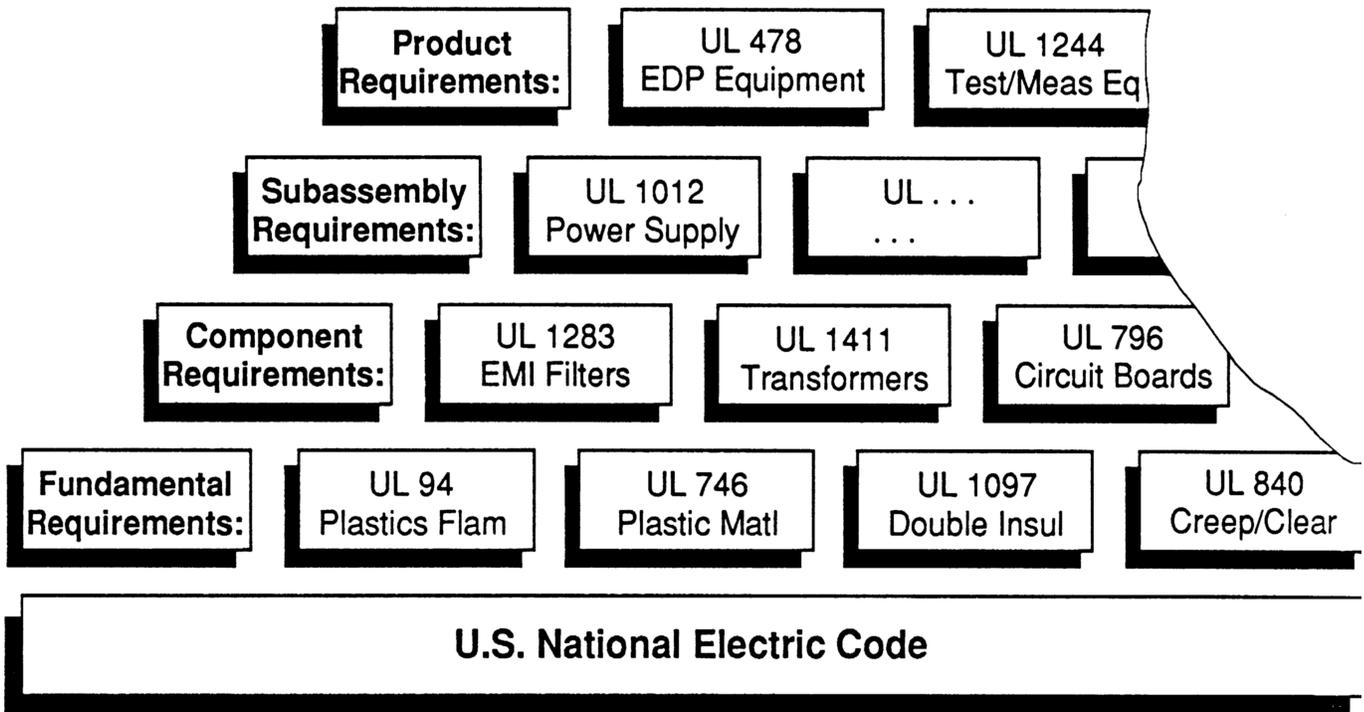


FIGURE 3

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# Hierarchy of Safety Standards

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complex. However, safety of products is an engineering discipline in itself—albeit a fledgling one, though the concern for safety of electrical products has existed for 80 to 100 years. Our efforts are broad in scope, covering everything from basic materials chemistry and physics to traditional electrical and mechanical effects, and from the effects of electric shock on the human body to the control of fires in equipment. This is not a simple discipline; we have no reason to expect the organization of standards to be simple.

## Where Can We Go From Here?

With the complex forces at work in the field of product safety, there are many routes available for future direction. Obviously, not everyone has felt a far-reaching need for the hierarchical organization of standards. Manufacturers ought to examine their interest in this matter. The major test houses should be examining their positions. Do they want to be working in a reactive mode all the time? Can they provide a channel to proactive standard development? The extensive experience of the test houses and their database of information is key to

correlating a sound analytical structure to the real world. To date, ANSI has apparently opted to leave all detailed decisions in the hands of the users and developers of standards in the USA. Do we need a national policy on this topic? Should the U.S. be a leader or a follower in the organization of standards? What does your company desire in this regard? In what direction does your industry association want to move? What are your own professional opinions? Let us know what you think. Perhaps we will hear from you right here in these pages.

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## Editorial

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Can you relate to the youngster who runs up to Dad with his first attempt at making bookends? What the bookends lack in craftsmanship are made up for by enough nails to sink a battleship. Yet Junior is proud and hopes Dad is as well. That's the feeling we have as we mail you this newsletter. We're hoping you'll be proud that it's from an organization you're associated with. The difference between Junior and ourselves is that we know we've got some way to go in craftsmanship and hope you'll give us your suggestions.

This second issue prepared by the professionals in Tandem's Graphics department is a giant step up from the editions done on the home typewriter. Besides their excellent work, we have the tremendous contributions of Rich Nute (Technically Speaking), Rich Pescatore (Chairman's Message), Dave Edmunds (News and Notes), Area Activity Report contributors, and other more recent contributors and volunteers we'll introduce in the next issue. And then there is Dr. Z, taking Product Safety to places it's never been before!

Despite the contributions of the above and Jane Benner's faithful typing, we find that a bimonthly publication schedule is necessary for now. The size of our publication and the mailing expenses are becoming excessive for a monthly publication. We would like to hear your thoughts on this new schedule. We certainly do not want to rule out a return to a monthly publication, depending on your responses.

Our staff is growing as we look for better ways to serve you. And like Junior, we'll be looking for ways to replace the nails with better craftsmanship.

**Roger Volgstadt, *Editor***

# News and Notes

Dave Edmunds, Xerox Corp.

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## VDT Users Guide

A 90-page document intended for use by professionals with technical responsibility for the installation and setup of VDTs is available from ANSI, 1430 Broadway, N.Y., N. Y. 10018 for a cost of \$25.00. This document (ANSI/HFS 100-1988) provides requirements for VDTs used in a variety of applications, and furniture used with them and the office environment in which they are used. Techniques for the measurement compliance to the standard requirements are given.

The document provides requirements for office lighting, noise, and temperature. Enhancing work posture, comfort of the user, seating, and performance on task on the workstation is the goal of the design requirements of the work station.

## ANSI Catalog

A revised *Catalog of American National Standards* has been issued by ANSI. The 176-page publication lists more than 8000 ANSI approved standards in fields of safety and health, acoustics, construction, gas appliances, etc.

## Pay Dues by Credit Card!!!

The IEEE board of directors has approved the use of most major credit cards to pay for service and dues of the Institute. Members may use the credit cards for payment of dues and services such as publications, provided the amount is over \$10.00. The IEEE has issued its own card (gold MasterCard and Visa), which is free for the first year and an annual fee thereafter. Annual rates vary depending on the company and monthly balance.

## CSA Notice 521 B on Information Processing and Business Equipment

Dated September 11, 1988, this notice states the requirements for continuing listing of products in two categories of Information Processing and Business Equipment as 1) those intended to be connected to the telephone network and 2) those NOT intended to be connected to the telephone network. Each category has different dates and requirements. For further information, contact CSA Application Section, Customers Group, Rexdale, (416) 747-2332 or any CSA regional or overseas office.

## “Product Liability Constraints Design” ...

... is a subheading of an article printed in the August 1988 issue of *Mechanical Engineering* entitled “Defensive Designing: A Guard against the Bizarre,” pages 40-42. This article briefly traces the start of product liability and its increase in the society.

## Engineering Opinion Survey

A survey has just been published by the IEEE USAB (United States Activity Board). This survey reports that engineers endorse higher standards for engineers entering the profession and continuing education for those in the field. A large majority believe an exam in overall knowledge in math and natural sciences should be recommended for all B.S.E.E. Members also support “whistle blowers” who make public their substantiated concerns on safety deficiencies. Copies of the survey can be obtained from Publication Sales, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08855, (215) 981-1393.

We have been considering the possibility of accepting paid advertising in the Product Safety Newsletter. Any individuals or companies who may be interested, please direct inquiries to the Editor, enclosing a sample advertisement.

# Ask Doctor Z

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*In the world of Product Safety and Certification, there are many pitfalls for the unwary. If you have a problem that seems insoluble, then it's time to ask Doctor Z! He has the answers, derived from his many years of training and experience in the Science of Product Safetiology. Pitfalls hold no terrors for Dr. Z, since he is on a first name basis with most of them. Any resemblance to persons, places, products, agencies, or good advice is purely coincidental, but don't let that stop you. Write to Dr. Z today.*

Robert Runte, Field Researcher  
Guaranteed Genuine  
Genealogies, Inc.

Dear Doctor Z,  
I seem to be caught in a Catch-22 situation and don't know where to turn. Perhaps you can help.

I was using a Type 40 Chronoshift when the displacement unit blew, leaving me stranded here. I managed to make emergency repairs, but the service manual says that, due to the danger of violating the Changed Consequences Act of '42, I have to have any alterations to the Chronoshift certified by a safety engineer before attempting to operate it. Unfortunately, it also specifies that the repair certification has to be from the same vendor as the original part. Since

the Type 40s were certified by EECSA, which won't be founded for another 60 years yet, I don't see how I can comply with the requirement for safety certification without using the Chronoshift to move forward to the earliest EECSA office, which of course means violating the safety regulations! In such a situation, would it be appropriate to have the repaired circuits certified by another vendor?

If not, am I stranded here forever or what? I mean, is the safety certification supposed to be for my benefit (in which case I'll risk it) or for third party liability?

*Confused and Desperate*

Dear Confused,  
It looks like a Catch-22 situation all right, but I am surprised that an individual who is bright enough to get the letter time-shifted so it could be delivered to Dr. Z hasn't got this figured out.

If you sign up to the school of thought that "rules is rules," it seems like you should get used to your new time period. The only hope you may have is if your client gets concerned over Guarantee Genuine Genealogies, Inc.'s inability to deliver the data, and your client comes looking for you. If this happens, you may get rescued, and meet the Changed Consequences Act of '42 by transporting your repaired Type

40 Chronoshift displacement unit to the EECSA for certification on the rescue ship.

Now, if waiting around isn't your cup of tea, you have some decisions to make. From your letter, it appears there are two issues.

First, is your repair sufficient to safely move you back to the origin of this trip? Without the benefit of EECSA repair certification, you should be able to determine the functionality and reliability of the repair. If you are not confident of this analysis, it appears from your letter that there are individuals available who can make this determination. A slip-up here may be life threatening.

Second, assuming the repair will work safely, what are the consequences of violating the "C.C. Act of '42"? Are they worse than remaining stranded? What are the "Act" consequences if the repair does not work safely? (If you are the only victim, this is moot.)

Let's look at the case where the repair works. Why does a regulation exist in the first place? Safety regulations are intended to benefit mankind by establishing a minimum level of safety. Regulations can also be written for other purposes, such as to ensure the economic welfare of a specified group. For now, we will assume

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# Area Activity Reports

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## Santa Clara Valley Chapter Report

Richard Pescatore opened the September meeting with a short review of the relationship of the Product Safety Technical Committee (PSTC) to the IEEE. Rich then introduced Kevin Ravo, the new chairman of the Membership Committee.

John McBain exhibited an advance copy of the September newsletter. The Society would like to thank everyone who helped with the newsletter.

The guest speaker for the meeting was Dr. Ruth Redden, senior

general council for John Fluke Inc. The topic of the night was on the European Harmonized Directive. Dr. Hedden outlined how the Directive will affect product liability and the responsibility of industry. According to Doctor Hedden, tremendous legal changes are occurring as Europe moves toward strict product liability.

Election of 1989 SCVC officers was the main event at our October meeting. Brian Claes was selected as chairman, replacing Rich Pescatore. Brian will be supported by newly elected officers Hugh Hagel, vice chairman, Rick Buck,

secretary/treasurer, and Kevin Ravo, membership committee chairman. National positions are still open for paper review chairman, symposium liaison chairman and standards liaison chairman (contact Rich Pescatore). Additional local committee chairman positions may be available in the near future. Please see Brian Claes if you are interested.

Jim Duckett, chairman of the local EMC Society, presented the SCV PSTC with a check for \$2000 for local activities.

Serge Bousquet of CSA will be the guest speaker at our next

## Ask Doctor Z

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the Changed Consequences Act of '42 was written for reasons other than the economic welfare of certification houses.

A regulatory authority is supposed to exercise judgment and flexibility in the administration of "rules." You have the possibility of using the repaired unit, submitting the repaired unit to the EECSA after your return to the appropriate time period and filing a report with the regulatory body administering the "Act" asking for a variance to cover

what you did! I do not know if having the repair certified by another test house before using the repair would have an impact on the decision of the regulatory authority. Obtaining the other certification may demonstrate your intent to support the act. So does filing for a variance on your return. Flip a coin???

Dr. Z doubts the purpose of the "Act" was to strand time travelers should the Chronoshift fail. Safety certifications are intended to benefit the individual using the

product, so you can "risk it." Regarding your question on liability, the bottom line is that if someone gets hurt, there is some sort of compensation. Period. As laws governing liability vary, I wouldn't spend much time on this aspect in your case. Instead, concentrate on making the repair safe so you can complete your trip and address the variance. If the trip is completed safely, liability doesn't enter the picture.

See ya around some time,  
*Dr.Z*

# Area Activity Reports

Continued

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meeting, which will be held Tuesday, November 22, 1988, at 7:00 p.m. at Apple Computer, 20525 Mariani Ave., Cupertino, on the corner of De Anza Blvd. (just south of Hwy. 280). Serge will discuss several topics relating to CSA activities and standards and, of course, will be available for questions.

There will be no meeting of the SCVC in December. Questions regarding the Santa Clara Valley Chapter may be directed to Rick Buck, (415) 967-4166.

## **Northeast Chapter**

The last meeting of the Northeast Chapter was held on Wednesday, October 26, 1988, at the Sheraton Boxborough Hotel. Forty-eight people heard Dan Bunge of Stratus Computers give a brief summary of the last CBEMA meeting. Bruce Langmuir of BOSE Corp. spoke on recent EIA safety related activity. Mark Swank of TUV Rheinland then discussed changes in European requirements for MOVs, monitors and the over current protection requirements of IEC 950.

Jim Norgaard reports that membership has grown to 147. Mailing meeting announcements and letters of introduction to local manufacturing companies is one of the ways Jim has found to increase awareness and interest in the Chapter. Attendance has been

so good that they have had to move future meetings to the Sheraton Boxborough to accommodate the attendees.

Please refer to the calendar at the end of the newsletter for a schedule of the next two meetings of the Northeast Chapter. Questions may be directed to Jim Norgaard at Dash, Straus and Goodhue, (508) 263-2662.

## **Northwest Area Report**

Thursday, October 20, was the date of the fall meeting for the Pacific Northwest Chapter. As reported previously, the meeting was held at Tektronix in Wilsonville, Oregon. The main topic of discussion was International Power Line Configurations and Components. The meeting was opened with a discussion showing a concern for the lack of attendance from the non-host cities. This meeting was well attended, as 54 people were there. The bulk of the Northwest Chapter members are from the Portland area.

Steve Miller from AT&T started the agenda with an interesting discussion on abnormal AC voltages. It was very interesting to note the kinds of things that happen when one fuse blows on a three-phase system or when the neutral opens in a single-phase supply. Our equipment should be prepared to see much more than plus or minus 10 percent of the nominal supply voltage.

Philip Tradgett from Tektronix U.K. explained the philosophy behind the U.K. ring circuits and their fused plugs. Ab Kars from Tektronix Holland showed how the main circuit supply of Holland is very typical of most circuits in Europe. Yoshio Yamada from Sony Tektronix explained how power generating equipment bought both in Europe and the U.S. is the reason for Japan being half 50 Hz and half 60 Hz. As our Norwegian guests were unable to stay in the U.S., Rich Nute gave a report on a new program offered by NEMKO which is comparable to the CSA category certification program. The program allows you to do your own testing and all reports can be generated in English. As soon as the report is sent in, the use of their mark is allowed. The program is called TBM (test by manufacturer) and details on the program can be obtained from NEMKO.

Bob Wallace from Tektronix introduced an IEC draft proposal for a new method of measuring leakage current that will be adopted by most of the major standards excluding medical equipment and a few others. His presentation started with a look at the history of leakage current and body resistance measurements at different frequencies. The notion of the possibility of using a shock to revive something that had been

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# Area Activity Reports

Continued

shocked was discovered as early as 1771.

The meeting concluded with a videotape on U.S. circuit breakers that do not open during very short high current pulses and how fuses or magnetic circuit breakers will open. It also showed the dramatic limits of 12 and 14 gauge Romex wire typically used in households.

The time, place, and topic of our next meeting will be decided by the Northwest Chapter officers in the next few months.

## **Southern California Chapter**

The last meeting of the Southern California Chapter of the Technical Committee on Product Safety was held on October 3, 1988. This was the third meeting and was held at MAI Basic Four in Tustin. There were six people in attendance. During the meeting, new members were welcomed and minutes were approved. The scheduled presentation on Laser Safety by Dr. James A. Roseboro was postponed until the next meeting on Monday, November 7, 1988, at 6:00 p.m.

The meeting continued with a discussion on the UL plans for publication of UL 1950, the IEC version of Information Processing

Equipment and the CSA plans to publish an IEC version of CSA 220. It was suggested that the Chapter should conduct a survey to determine the various Agencies/Standards that the chapter is involved in and the specific areas of expertise of the Chapter. Plans were discussed to increase attendance.

Paul Henick was elected secretary/treasurer, joining Charlie Bayhi, chairman, Rolf Burckhardt, vice-chairman, and Ercell Bryant, program chairman.

Meetings will be scheduled every month, according to the following schedule:

*Monday, November 7, 1988*  
Laser Safety by Dr. James A. Roseboro

*Monday, December 5, 1988*  
ETL, Present and Future by Larry Todd

*Monday, January 9, 1989* How Safe are Circuit Breakers by PACE, Inc.

Details as to location and time can be found on the last page of the newsletter, under *Calendar*. Questions can be directed to Charlie Bayhi at MAI Basic Four, (714) 730-2556.

## **Future Areas:**

Please contact John if you want to encourage formation of a Chicago area chapter.

John Allen  
Mitsubishi Electric  
800 Biennann Court  
Mount Prospect, IL 60056  
Phone: (312) 699-4414  
Fax: (312) 824- 7221

George is planning an organizational meeting for a Central Texas Chapter. Please give him a call if you're interested.

George Jurasich  
TUV Rheinland of N .A., Inc  
Suite 165  
3420 Executive Center Dr.  
Austin, TX 78731  
Phone: (512) 343-6231  
Fax: (512) 343-6233

Steve is looking for interested people in the Denver, Colorado, area.

Steve Tarket  
Hewlett-Packard  
3404 E. Harmony Rd.  
Fort Collins, CO 80525  
Phone: (303) 229-2481  
Fax: (303) 229-2692

# Questionnaire Membership

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**If you have not filed a questionnaire with the Technical Committee of the IEEE EMC Society, then we encourage you to do so with the following form. You may have filed a questionnaire with your local Chapter, in which case there is no need to return this form. Please return the form to the appropriate address shown at the bottom of this form.**

Name: \_\_\_\_\_ Company: \_\_\_\_\_  
Street Address: \_\_\_\_\_ P.O. Box/Mail Stop: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip Code: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_  
Types of product dealt with: \_\_\_\_\_  
Regulatory agencies familiar with: \_\_\_\_\_  
Your background in product safety: \_\_\_\_\_  
Affiliations: \_\_\_\_\_

**Since we are affiliated with the IEEE, your membership in the IEEE is desirable. Please indicate your membership status or if you would like an IEEE membership application:**

Are you a member of the IEEE? \_\_\_\_\_ If No, would you like a membership application: \_\_\_\_\_  
If Yes, specify your membership no. \_\_\_\_\_ membership grade: \_\_\_\_\_ IEEE Societies: \_\_\_\_\_

**Please help us to identify topics of interest for Chapter meetings and technical articles by ranking the following topics.**

**Please rank the following from "10" (most interest) to "1" (least interest).**

Product Liability \_\_\_\_\_ System safety Analysis Techniques \_\_\_\_\_  
Software Safety \_\_\_\_\_ Quantitative Risk Analysis/Hazard Assessment Techniques \_\_\_\_\_  
Hazards, Type: \_\_\_\_\_  
Test Methods \_\_\_\_\_ CSA Presentation, Subject: \_\_\_\_\_  
TUV Presentation, Subject: \_\_\_\_\_ UL Presentation, Subject: \_\_\_\_\_  
Human Factors \_\_\_\_\_ Product Safety Management \_\_\_\_\_  
United States/Canadian Fair Trade Agreement, Effects on Product Safety \_\_\_\_\_  
Other Subject: \_\_\_\_\_

Would you be interested in contributing articles, cartoons, news items, etc., to the Product Safety Newsletter? \_\_\_\_\_

Would you like to be actively involved with other committee activities such as membership coordination, etc. ? \_\_\_\_\_

If not in an area with a Product Safety Committee, would you be interested in organizing a committee in your area? \_\_\_\_\_

**Please return this questionnaire to the appropriate address:**

**Southern California**  
FileNet, Inc.  
3565 Harbor Blvd.  
Costa Mesa, CA 92626  
Attn: Mr. Ercell Bryant

**Northern California**  
Underwriters Laboratories  
1655 Scott Blvd.  
Santa Clara, CA 95050  
Attn: Mr. Kevin Ravo  
"Product Safety Technical Committee"

**Northeast Area**  
Dash, Straus & Goodhue  
593 Massachusetts Ave.  
Boxborough, MA 01719  
Attn: Mr. Jim Norgaard

**Pacific Northwest (Seattle Area)**  
John Fluke Mfg. Co., Ltd.  
P.O. Box C9090  
Everett, WA 98206  
Attn: Walt Halt

**Pacific Northwest (Portland Area)**  
Western Transformers  
6701 S.E. Alberta St.  
Portland, OR 97206  
Attn: Mr. Art Henderson

**Other Locations:**  
Tandem Computers  
2550 Walsh Avenue.  
Santa Clara, CA 95051  
Attn: Roger Volgstadt

# Letters to the Editor

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*The following letters were received since our last edition of the Product Safety Newsletter. The editor reserves the right to edit letters to fit the available space. Opinions expressed are those of the authors and do not necessarily represent those of the newsletter staff or the Product Safety Technical Committee of the IEEE EMC Society.*

## Mail Boxing

Mr. Jeffery Lind's letter to you is an interesting exposition of a certain point of view. Given the point of view which seems to be clearly represented, I would say that Mr. Lind did an eloquent job of pressing his point.

Unfortunately, I strongly disagree with his vision of the paramount role of the professional safety engineer.

Mr. Lind seems to be equating "requirements" with "information" and that the wise old safety engineer and the fledgling safety engineer have the common bond of seeking a certification for their product as a logical culmination of their professional duties (this is often referred to as the "certification mentality"). Acquiring safety agency bumper stickers may indeed be the charter of some of us, particularly in certain work situations. But it is being a bit patronizing to call such work "engineering." And I fail to see much professionalism that can be assigned to agency-chasing. So the pursuit of "requirements" and "certifications" may be justifiable during a grunt day but I suggest that it would be a mistake to

confuse daily pragmatic needs with the goals of a Product Safety Society.

The goals of the Product Safety Society would be better cast on a higher plane than agency-chasing! There has been much mention of enhancing the professional character of the members through the efforts of the Society (and this publication). Although this could mean almost anything, it certainly sounds reasonable. And, to me, it suggests an intellectual endeavor that is both fatiguing and exhilarating—i.e., bust the rust loose from the ol' synapses and go a-hunting some basic truths, however controversial. When does a product safety technician suddenly become a product safety engineer (in the sense of the Society's mission)? To what criteria are such judgments made?

When does a product safety engineer suddenly become a professional product safety engineer and why? Such questions smack of the kind of thing that societies are created for. Further growth for the members ...Growth in the cleverness with which one acquires bumper stickers? I think not. Growth in the ability to

recognize a foolish requirement with a view toward championing a revision in that foolish requirement? Probably. Growth in being able to actually influence the standards maintainers via solid data and effective selling through cognizance of the real needs? Probably. All these things come from a basic impulse to better know the "big picture." Certification, as such, is a very small part of the discipline of safety engineering in many practitioners' eyes. Why not soar with the eagles instead of grubbing around with the sparrows?

What's wrong with "infighting"? Sharpens the senses. What's wrong with controversy? 'Tis the only way anyone will ever have of knowing whether their pet theory is dogfood. Egotists are running around loose; each of us knows scores. Why expect a society publication to be exorcised of egotists when the rest of the world isn't? Why worry about "requirements" when there are so many intellectual growth opportunities by leaving certification behind and seeking true safety engineering? "... and you absolutely need

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# Letters to the Editor

Continued

the support of the agencies to become a voice.” That assertion dismays me. If anything, the inverse is true. If Mr. Lind means “become a voice in certification,” then I suppose his assertion makes sense. But I can detect no one who sees the Society’s goals as being that parochial. If he means “become a voice in safety engineering,” then the assertion is meaningless. Certification must not be confused with “safety engineering”!

I feel that this publication has been surprisingly successful in forging a “tone” which compliments the aims of the Society as I understand them. If this is true,

then it is immediately successful in being a “positive force in the Safety field.” There has been little impetus to become a “positive force in the Certification field.”

Jerry Blanz, Hewlett Packard

## More About TUV

In reference to Letters to the Editor entitled “OOPs Department” in the September/October 1988 issue (p. 21), I strongly feel that some of the statements made by Laszlo P. Hasenau of TUV Rheinland of N.A. completely misrepresented the true facts of this matter .

His letter implies that among all the TUVs in the United States,

only TUV Rheinland of N .A. has the authorization to issue the GS mark.

TUV Essen Laboratories is a fully authorized North American subsidiary of TUV Rheinisch-Westfalischer (Essen) of Essen Germany [*annual report attached to author’s letter not included here-Ed.*].

Mr. Hassenau stated that neither TUV Rheinsich-Westfalischer (or TUV Essen as used here in the U.S. as well as in Germany as an abbreviation) nor TUV America are listed in the Equipment Safety Law Book (GSG) as recognized test agencies. He then gives a partial list of approved agencies. It seems that he purposely stopped at # 5 because # 6 is in fact TUV Essen (Rheinisch-Westfalisher). Gendemen, this sort of tactic is indicative of questionable business practice.

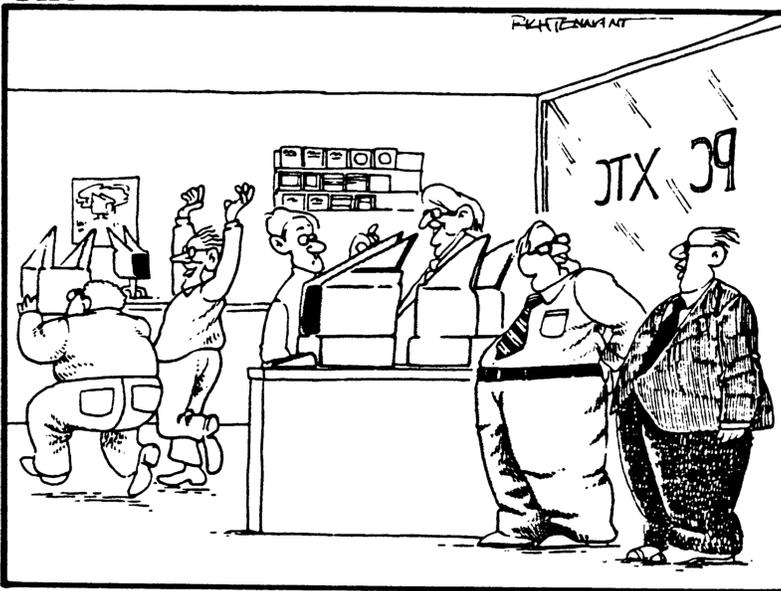
I want to assure you and your readers that the GS, Bauart and IEC Mark Licenses issued by TUV Essen Labs are no different in quality or authorization than licenses issued by the other **AUTHORIZED TUV AGENCIES.**

Please clarify this matter by publishing this letter in the next issue of the *Product Safety Newsletter*. Please also send me a copy. Thank you.

Roman Rakovsky

General Manager, TUV Essen Laboratories

## The 5th Wave



“WELL, WE TOOK A POLL AND FOUND THAT WHAT PEOPLE REALLY WANTED WASN’T MORE POWER OR INCREASED APPLICATIONS, BUT JUST REALLY NEAT TAIL FINS.”

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# Officers and Committees

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## **Product Safety Technical Committee:**

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# Calendar

The Product Safety Technical Committee of the IEEE EMC Society

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***Wednesday, November 16  
Northeast Chapter***

Subject: SEMKO and UL  
Speaker: Per-Olaf and Randy Ivans  
Time: 7:00 p.m.  
Location: Sheraton Boxborough  
Intersection of Rts 495/111  
Boxborough, Mass.  
Contact: Mr. Jim Norgaard  
(508) 263-2662

***Monday, December 5  
Southern California Chapter***

Subject: ETL, Present and Future  
Speaker: Larry Todd  
Time: 6:00 p.m.  
Location: MAI Basic Four, Inc.  
14101 Myford Ad.  
Tustin, CA 92680  
Contact: Mr. Charles Bayhi  
(714) 730-2556

***Monday, January 9 Southern  
California Chapter***

Subject: PACE, Inc.- How Safe  
Are Circuit Breakers?  
Time: 6:00 p.m.  
Location: MAI Basic Four, Inc.  
14101 Myford Ad.  
Tustin, CA 92680  
Contact: Mr. Charles Bayhi  
(714) 730-2556

***Tuesday, November 22  
Santa Clara Valley Chapter***

Subject: CSA Presentation  
Speaker: Serge Bousquet  
Time: 7:00 p.m.  
Location: Apple Computer  
20525 Mariani Ave  
Cupertino, CA .  
Contact: Mr. Rick Buck  
{415} 967-4166

***Wednesday, December 14  
Northeast Chapter***

Subject: Factory Mutual  
Speaker: Frank McGowan  
Time: 7:00 p.m.  
Location: Sheraton Boxborough  
Intersection of Rts 495/111  
Boxborough, Mass.  
Contact: Mr. Jim Norgaard  
(508) 263-2662

***Pacific Northwest Chapter***

Next meeting details: To be  
determined.

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