

Greetings Colleague!

Summer is coming to a close, fall is around the corner, and it's the time of year for our May-June-July-August edition of our newsletter.

DfR Solutions Announces West Coast Office

In response to increasing requests for our services in the heartland of the electronics industry, the Bay Area, DfR has opened an office in Oakland, CA. This office is headed by [Dr. John McNulty](#), an expert in the rapidly expanding technologies of opto-electronics and micro-mechanical electrical systems (MEMS). For more information on this newest expansion, please click [here](#).

Update on Tin Whiskers

DfR staff recently attended a conference on tin whiskers and after sitting through talks that were good, bad, and sometimes irrelevant, our expert staff has put together [this summary](#) to provide you with a clear and concise understanding of the key issues on this important topic. For more information on tin whiskers, please contact [Bob Esser](#) or [Gerd Fischer](#).

Service of the Month: Initial Reliability Assessment

Worried about incorporating the latest technologies? Having reliability issues with your current generation? Consider a DfR Solutions' initial reliability assessment (IRA). This one-of-a-kind review provides lead engineers and product managers a rapid understanding of potential reliability and manufacturability issues. Our focus is comprehensive and can include layout, component selection, thermal issues, ESD, EMI, solder joint wearout, derating, and much more. DfR's unique expertise and experience will provide you peace of mind and a path forward to success. For more information, please contact [Nathan Blattau](#).

Rolling Back RoHS? Forgetaboutit!!

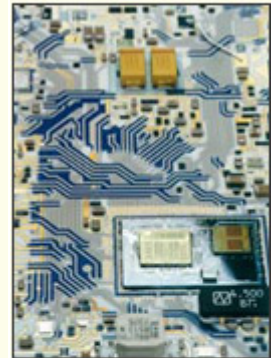
For those of you who might still hope to wake up from the RoHS 'dream', this [article](#) is for you. When USA Today uses the term, TOXIC TECH, the writing is clearly on the wall for the future of environmental requirements.

Time to Failure for Electrochemical Migration

While solder joint reliability has received all of the attention due to Pb-free, the electronics industry continues to struggle with corrosion behaviors and the electrochemical migration (ECM) it induces. From red phosphorus to dendritic growth to conductive anodic filaments (CAF), there is a need to understand the drivers (for prevention) and the time to failure behaviors (for prediction). This [white paper](#) by DfR provides a comprehensive review of ECM reliability models to provide some guidance in this critical area. For more

In This Issue

[Latest on Tin Whiskers](#)
[Service of the Month](#)
[The End of RoHS?](#)
[Predicting Dendrite Growth?](#)
[Weight Gain and Halide Free](#)
[DfR in the News](#)
[Upcoming Events](#)
[Advertisements](#)



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Do Bromide Flame Retardants Make Us Fat?

And it gets even better. The online magazine Salon just published an [article](#) that outlines how Bisphenol A is slowly killing us (and expanding our waistlines). Does Bisphenol A look familiar? It should. It is the key structure in Tetrabromobisphenol A (TBBPA), the dominant flame retardant in printed circuit boards (PCBs). Can anyone say Bromide-Free? For more information on trends in halide-free laminate, please contact [Seth Binfield](#).

In the News

DfR Announces New Staff Members

[Bob Esser](#) has joined DfR as a member of the senior technical staff. Prior to joining DfR, Dr. Esser was the primary point of contact at the Missile Defense Agency (MDA) for reliability, packaging and radiation hardening of electronics, electro-optics and infrared sensors. He was also program manager for the Inertial Measurement Unit standardization program. Dr. Esser received his MS and his PhD in Materials Science and Engineering from the University of Maryland, and his BS in Engineering Physics from Missouri State University. He is currently a member of the United States Navy Reserves and has a top secret security clearance.

[John McNulty](#), an expert in optical electronics reliability, has joined the DfR Solutions staff. Dr. McNulty has worked on the packaging, reliability, and failure analysis of telecom devices and commercial laser systems for over nine years. He has designed and executed accelerated testing plans for individual components and multi-component devices, including Telcordia and military qualification testing, and was a committee member involved in revision of Telcordia GR-468-CORE (covering active devices).

Upcoming Events

DfR Solutions in Phoenix/Tucson Area (August 13 – 17)

[Nathan Blattau](#) will visit companies in the Phoenix/Tucson Arizona area to make presentations on Pb-free, design-for-reliability assessments, supplier assurance and other topics. If you located in the area and are interested in having Dr. Blattau speak to your company, please contact [Sheena Mitchell](#) to make arrangements.

DfR Solutions in East Texas (August 20-24)

[Craig Hillman](#) will be presenting to a number of companies in the East Texas area (Houston, Austin, and Dallas). If your company is in the region, and you would like Dr. Hillman to give a presentation, please contact [Sheena Mitchell](#) to make arrangements.

DfR Solutions to Host Reception during Lead-free Electronics in Aerospace Project (LEAP) (Baltimore, MD: September 5- 7)

DfR will host a special reception on September 6th for those attending the LEAP meeting. The LEAP meeting will take place at the [Historical Electronics Museum](#) in Linthicum, MD. The reception will be held from 6:00-8:30 p.m. at the BWI Marriott, right next door to the museum. Beverages and hors d'oeuvres will be provided during the event. For more information on the reception contact [Deborah Fisk](#) at DfR Solutions. For more information on the meeting, contact [Andy Kostic](#) at Northrop Grumman.

DfR Solutions in Lower New England (Connecticut / Rhode Island: September 12-13)

[Craig Hillman](#) will be presenting to a number of companies in the southern New England area in mid-September on a variety of topics (Pb-free, accelerated test plan development, circuit analysis, etc.). If you are interested in having Dr. Hillman speak to your company, please contact [Sheena Mitchell](#) to make arrangements.

DfR Solutions in New Jersey (September 17-19)

[Craig Hillman](#) will be in the northern New Jersey area visiting a client for design review activities. If you are interested in having Dr. Hillman speak to your company while he is in the area, please contact [Sheena Mitchell](#) to make arrangements.

DfR Solutions in Europe (October 1-5)

[Gerd Fischer](#), who is fluent in German and Danish, will be visiting European customers of DfR. If you are interested in a visit to learn about ceramic capacitors, tin whiskers, or other areas of expertise at DfR, please contact Dr. Fischer or [Sheena Mitchell](#) to make arrangements.

IPC International Conference on Lead Free Electronics (Berlin, Germany: October 4-5)

DfR Solutions will present a full-day seminar, "Understanding Failure and Root-Cause Analysis in Lead Free Electronics". This seminar is designed to educate engineers and managers on the failure mechanisms of concern with Pb-free and the tools and analyses that will help identify root-cause. For more information, contact [Craig Hillman](#) or [Michelle Michelotti](#), or register online.

Avoiding Failures (San Jose, CA: October 3-4)

DfR Solutions, in conjunction with [PTI](#), will present a two-day workshop, "Best Practices in Failure Avoidance," that will provide reliability engineers and management a foundation by providing a comprehensive review of the best practices in engineering and reliability assurance with case studies that will provide guidance on the practices most appropriate for a given design, use environment, desired lifetime, and available resources. To register, call the PTI office at 636-343-1333 or visit their website.

SMTA International Conference (Orlando, FL: October 7-11)

DfR Solutions is proud to announce that it will present two tutorials at SMTA's annual meeting.

[Craig Hillman](#) will present a one-day tutorial on Monday, October 8th titled, "Selecting a Lead-Free Solution for Military, Avionic and Space Applications." It will provide data and information on developments over the past 6 to 12 months in Pb-free technology, including market trends, process solutions, and quality and long-term reliability issues. Recent GEIA documents, which are expected to be the backbone of lead free product qualification for military and avionic applications, will be reviewed in regard to risk minimization. For more information, contact [Sheena Mitchell](#) or click [here](#) to register.

[Jim McLeish](#) will present a one-day tutorial on Thursday, October 11th titled, "Root Cause Analysis (RCA) For Product Problem Solving." It will provide methods and tools for analyzing performance problems and to uncover root causes. Ways of gathering data for root cause analyses, determining which problems should be analyzed, and how to design, develop, and implement a root cause analysis program for your company will be presented with working examples. For more information, contact [Sheena Mitchell](#) or click [here](#) to

register.

SMTA International Conference (Orlando, FL: October 7-11)

DfR Solutions will present a paper, "Silver and Sulfur: Case Studies, Physics, and Possible Solutions". This presentation will provide an overview of known silver sulfide corrosion failures. The fundamentals of these case studies will provide a path for a discussion on the physics of this phenomenon, including how sulfur reacts with silver, how this reaction is influenced by the environment, how classic corrosion behavior may accelerate this reaction, and how sulfur-containing gases may migrate through and be retained by polymeric materials. For more information on the conference, visit the SMTA website.

Surface Mount and Circuit Board Assoc. (Australia / New Zealand: October 24-31)

[Craig Hillman](#) will be presenting at several conferences and organizations on Pb-free and other topics during a tour of "Down Under" in late October. More information will be provided when available.

IEEE – ASTR 2007 Conference (Greenbelt, MD: October 31-November 2)

DfR Solutions is a co-local host for this important industry meeting on best practices in testing and reliability assurance in electronics. This year's conference theme, "Accelerated Life Testing: It's Role, Challenges, Attributes and Interaction with Qualification Testing," focuses on the growing issue of reconciling the need for the highest quality product with the necessary push for early time-to-market. For more information on the workshop contact [Cheryl Tulkoff](#), or visit the IEEE [website](#).

IMAPS 2007 (San Jose, CA: November 11-15)

[Craig Hillman](#) will present "Selecting Lead-Free Solutions for Military & Avionics" on November 12 during the IMAPS Conference. For more information on the conference visit www.IMAPS.org.

Practical Reliability and Maintenance Symposia (College Park, MD: November 15-16)

In collaboration with [BQR](#), DfR will be hosting this highly educational symposium. This meeting provides a forum for expert presenters from various industries, universities and government to come together with circuit boards designers, mechanical engineers and reliability practitioners to learn and understand the common cause that initiate failure in electronics and receive a comprehensive review of current tools and techniques used to identify those potential failures. For more information, click [here](#) or contact [Sheena Mitchell](#).

IEEE Reliability Society – Boston Chapter (December or January 2008)

[Craig Hillman](#) will provide an overview on fiXtress™, the revolutionary software that automates component stress analysis, reducing product development time and greatly reduces the risk of potential field issues. More information will be provided when available.

SMTA Medical / Medical Device and Manufacturing (Anaheim, CA: January 29, 2008)

DfR Solutions will be presenting "Selecting a Pb-Free Solution for Medical Devices" on January 29, 2008 at the Medical Device and Manufacturing West Conference. More information will be provided when available.

Cisco's "Innovation in Test" (San Jose, CA: March 5 - 6, 2008)

DfR Solutions will be presenting on industry best practices in testing bare boards and completed assemblies. More information will be provided when available

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Our patented lead-free solder SN100C is based on a unique formulation of tin, copper, nickel and germanium that delivers cost-effectively high performance in production and reliability in service. SN100C matches the performance of the tin-lead solder it replaces in delivering smooth, bright, crack-free fillets and high first pass yield. And its combination of strength and ductility ensure superior performance in high strain conditions such as vibration.

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