



On the
Forefront

Phil Zarrow

The Five Stages of Lead Free

Is your company ready to accept the inevitability of the upcoming lead-free transition?

"Life is pleasant. Death is peaceful. It's the transition that's troublesome."

—Isaac Asimov

Death and lead-free assembly have something in common: They are both inevitable. Unlike death, though, lead free is not necessarily terminal. In fact, its purported purpose was to eliminate a potential health hazard. Nevertheless, the Restriction of Hazardous Substances (RoHS) takes effect in July 2006, and, if you market your products in the European Union (EU), any new inventory shipped or sold there will have to be lead free. So you had better have, at the very least, a lead-free roadmap in place by mid-2005. Don't fight a fact—deal with it.

Plenty of good information is available, and your company's roadmap will be developed only after much research and input from many sources. Be aware that some ambiguity about lead free and RoHS still exists. At present, a regulating organization to check compliance has not yet been selected. How will compliance be checked—and by whom?

These and other questions will be answered in time, although perhaps not by July 2006. And do not get ideas about sneaking lead-bearing products in under the wire. Unlike the U.S., in Europe they have no reservations about putting chief executive officers and directors in jail for corporate misdeeds.

In my lead-free implementation work with clients, I have noticed that different regions have attained different attitudes towards lead free. I was recently doing lead-free work with clients in Southeast Asia whose attitude was: "Okay, we have to do it, so let's get on with it." Indeed, quite a number of firms are already producing lead-free products (and not only for Japanese clients).

In North America, a vast number of firms are in denial regarding lead free. Since the condition is rather serious, perhaps some therapy may be in order. So, taking a cue from death expert Dr. Kubler-Ross, here are the Five Stages of Lead Free.¹

1. Denial

Having only recently learned of RoHS, denial is common among North American electronic manufac-

turers. "What's a RoHS?" "Never heard of it." "Lead-free what?" These comments are often followed by: "Well, it won't affect us." Then, the companies realize that a good portion of their market is the EU. "Well, maybe it will be delayed beyond 2006."

Many North American manufacturers have become recently and suddenly aware of RoHS since their marketing people never informed them about it. Why they were not informed is a bit of a mystery. While RoHS is not exactly headline news, it has been quite visibly in the making for the past eight years, and most Europeans were well aware of it. The shock and denial phase is usually a very temporary defense.

2. Anger

When denial can no longer be maintained, it is replaced by anger, rage and resentment. "Our industry consumes less than 1% of mined lead—why pick on us?" "There have been studies that show that lead free will be more toxic to the environment than continuing with the use of lead bearing alloys." "This reeks of exclusionary politics!"

Of course, no matter how valid these points, they do not matter since RoHS has already been enacted. Companies can either get with it or get out of the way.

3. Bargaining

The next phase is an attempt to postpone the unavoidable. "Maybe our product is exempt." "How are we supposed to go lead free if we can't get lead-free components from our suppliers?" "There aren't any workmanship standards that cover lead free."

Actually, a number of components have already been converted to lead-free finishes. What is scary is that

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many component manufacturers have not designated this radical change with their nomenclature (for example, a suffix indicating the lead-free status of the part). So, many people may be using lead-free components and not even be aware of it.

Not all parts will eventually be available lead free. The trick is finding which suppliers to use. Bill of materials review is one of the most challenging parts of lead-free implementation. A few products—mostly avionics or medical—will be exempt from lead free, some for a limited period of time, some indefinitely. However, the majority of products will have to comply unless you want to kiss off your European markets.

As far as workmanship standards, IPC is convening a committee to produce specifications to address lead free. Since the specifications are done by a committee, the lead-free standards are taking a while to develop.

4. Depression

Rage and anger are eventually displaced by fear of the work ahead. “Lead free is a logistical nightmare. How will we ever make the conversion?” “We will have to maintain both leaded and lead-free processes during the transition period, how will we ever manage that?” “What if our competition is ahead of us and we look like followers playing catch-up?”

Be careful to not get any tears in your solder pot. For most companies the task is, indeed, Herculean. But the sooner you face up to it, the quicker you can get in gear.

5. Acceptance

A number of assemblers, primarily in Asia or Europe, never became depressed, angry, happy or sad about lead free, but remained somewhat void of feelings. Their attitude to just accept it and move on has carried them through the initial stages of lead-free implementation, though they are still very much, like everyone else, in a learning mode.

For the rest of the industry, it is okay to come to terms with these feelings. Ours is a strong and resilient industry. We have survived having our Freon-based cleaning solvents taken away, VOC restrictions, countless economic downturns and even the evolution to surface-mount technology 20 years ago, which a number of people in denial at the

time said would be a passing fad. We will overcome the obstacles and adapt, where appropriate, to lead free. And we will be all that much stronger for it. Remember, we're all in this together. ■

Reference

1. Kubler-Ross, Elizabeth. *On Death and Dying*, Simon and Shuster, 1969.