1. What element of the Semiconductor, FPD, or MEMs manufacturing process does this directly relate to?

This safety guideline is directly related to the decontamination of manufacturing equipment.

2. What problem does this standard solve?

Up until the updated SEMI S12 Guidelines was approved there were numerous ideas as to what was required in regards to tool decontamination prior to shipment. There was no clear cut direction and no one standard being followed by all involved with the movement of semiconductor tools and ancillary equipment.

The updated SEMI S12 Guideline adds to the previous SEMI S12-0298 and provides missing details, such that now all tool decontamination can adhere to some basic standard practices, for example, to reduce incidents that may have previously occurred. In addition, the updated SEMI S12 Guideline provides baseline information for decontamination planning, safety approaches and equipment to use, and decontamination methods for specific manufacturing equipment. Finally, the SEMI member will find a list of decontamination criteria to address hazards of concern for semiconductor equipment as well as suggested documents that may be useful to track the decontamination activities.

3. In as much detail as possible describe how this standard will provide cost savings or overall economic benefits?

Tools that are not decontaminated properly when shipped provide a very likely opportunity for some type of mishap (ex: spill, fire). The cleanup of such events can be very costly, not to mention the substantial fines possible and legal implications. Historically, in almost all cases the costs related to improper tool decontamination are far greater than the costs involved with performing the tool decontamination prior to movement and in alignment with the guidelines laid out in the updated SEMI S12 document.

In many cases when tools are sold or are returned from lease, additional costs are incurred due to tool decontamination either not being performed or being performed improperly. The updated SEMI S12 Guideline provides information, such that negotiations can be made at the time of the tool sale, or change of ownership as to how the decontamination costs are handled. The document clearly indicates the need for tool
decontamination and provides the guidelines as to exactly what is needed to render the tool safe for movement and/or shipment.

When decontamination is handled at the time of sale, the process is accomplished at a much lower cost, given the ability to perform the decontamination in a controlled environment and prior to the movement of the tool and subsequent rigging, crating and shipping.

When tool decontamination is performed after tool movement, the tool has to be removed from crates at a considerable cost. The decontamination now needs to be performed in an uncontrolled environment in which steps are required to perform the decontamination safely and in such a way to not adversely effect the environment. When this cannot be performed, additional costs are required to protect the tool and move to an environment where the decontamination can be performed.

4. Describe broadly how valuable this standard is to the Semiconductor, FPD, or MEMs industry?

In the past few years and with the ever changing technology, the need to move outdated tools has grown tremendously. With this upturn in used tool movement/shipment the need to ship these tools safely continues to be paramount. The updated SEMI S12 Guidelines provides a concise source of information that can be used by fab operators, tool brokers and OEMs such that the movement of tools can be performed safely and in a cost effective manner.