

## Tool or Facility – What Should it Be?

Subtitle – **Reconciling differences between production equipment needs and facility support.**

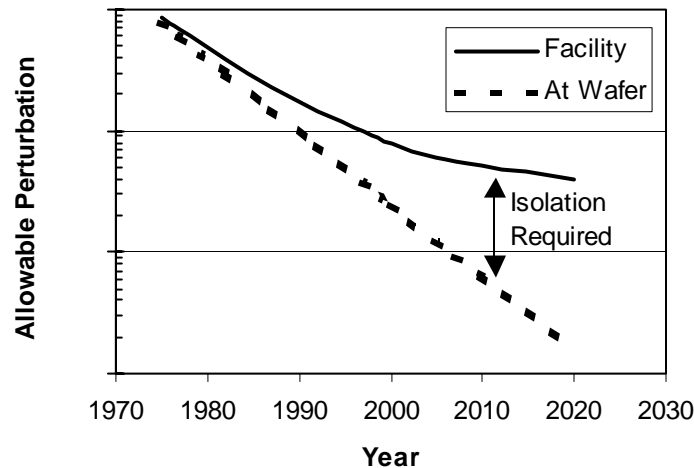
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### ABSTRACT

It is not unusual for production equipment's environmental requirements to be more stringent than the facility can economically provide, thus forming a "gap" between tool needs and facility capabilities, as shown in Fig. 1. The gap can involve requirements for vibration, sound, EMI, cleanliness, or any of the many other environmental parameters. This paper presents a model for tool-building interaction that can be used to: (1) define how environmental contaminants travel from the outside environment to the wafer; (2) define how environmental limits at the wafer can be back-calculated to account for the effects of the production equipment housing and/or support such that requirements at the interface can be defined; and (3) define how ITRS facility and production equipment teams can interact. The objective of this process is to go beyond a tool's simplistic environmental criteria and develop a formal means by which the "isolation performance" that must be accommodated either by the tool or the facility or combination can be defined. An economic model is included in which one may balance the cost of the equipment's internal isolation with that of designing environmental control into the facility itself. Examples will be drawn from discussion of vibrations and vibration isolation.



**Figure 1. Change in allowable environmental perturbation as a function of time.**

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