

Survey Uncovers Cleanroom Concerns

Survey Uncovers Key Concerns for Electronic and Semiconductor Cleanrooms

Nothing is more serious than a contamination event in a cleanroom. It can lead to expensive shutdowns, increased production expenditures as well as recalls and damage to a company's reputation. In the electronic and semiconductor industries, the costs can be staggering: a single spec of dust on a worker's glove can ruin a \$10,000 wafer.

In these cleanroom environments, ensuring product quality and protecting the process from worker contamination are the two most important considerations, according to a new survey from Kimberly-Clark Professional*.

The survey, conducted by Penton Research, polled electronic and semiconductor cleanroom workers. It revealed some disturbing information about a key issue: compliance with cleanroom protocols. For instance:

- Virtually all respondents reported incidents of noncompliance in their cleanroom environments
- A third of the respondents reported that the incidents occur "occasionally"

The most common incidents of noncompliance observed by respondents were:

- Improper donning and gowning (58 percent)
- Lack of standard operating procedures (46 percent)
- Insufficient or improper cleanroom maintenance (43 percent)

The contamination source that respondents were most concerned about was particles, which was selected by 70 percent of those surveyed. This was followed by: improper cleaning/maintenance (67 percent) and worker contamination (64 percent).

How can you protect your process?

There are a number of steps that electronic and semiconductor manufacturers can take to help ensure product quality and minimize the risk of contamination:

- **Make sure cleanroom workers are properly trained in PPE protocols.** Proper training and employee engagement are crucial elements in ensuring compliance and helping to reduce contamination risks. The survey findings support this:
 - 91 percent of respondents said they would consider a manufacturer on-site training program useful when their company introduces new

electronic or semiconductor supplies, such as apparel, gloves, masks and eyewear.

- 22 percent said they would consider on-site training “very or extremely useful.”
- 76 percent said an onsite training program conducted by the manufacturer would increase their confidence in the proper use of and effectiveness of these supplies.

Kimberly-Clark Professional* offers a unique, on-site employee-training program known as APEX. To ensure the safety of the scientific process, APEX effectively engages employees and enhances efficiency and performance.

- **Encourage proper donning and gowning.** Gowning is designed to keep particles and other microorganisms from reaching and contaminating the product being made. Single-use garments, such as **Kimtech Pure* A5 Apparel**, can help. Kimtech Pure* A5 Apparel delivers enhanced protection and compliance through **Clean-Don* technology**. Features include: a mandarin collar that comes up higher on the neck to provide added protection; a breathable, cloth-like fabric made of Spunbond Meltblown Spunbond (SMS) polypropylene material; thumb loops to make donning easier; and a patented Reflex* design that is 7.5 times more rip-resistant than ANSI minimums. In addition, single use disposable garments are washed once, guaranteeing optimal, predictable performance for each and every garment. When selecting apparel for electronic or semiconductor manufacturing environments, it’s essential to choose a cleanroom garment that offers a combination of quality, comfort and protection.
- **Choose the right gloves.** Another crucial element in protecting the scientific process is selecting the right gloves for the task. Kimberly-Clark Professional* has an innovative glove specifically designed to meet the needs of the electronic and semiconductor industries. **Kimtech Pure* G3 EvT Nitrile Gloves** provide high performance, durability and value. Free of natural rubber latex, these Extra-Value Technology gloves are preferred by cleanroom operators for overall tactile performance.¹ They also offer:
 - Superior comfort
 - Easy donning
 - Enhanced grip

Sustainability matters

When selecting products for your cleanroom environment, it’s also wise to take environmental considerations into account.

¹ Compared to Kimtech Pure* G3 White Nitrile Gloves, size medium (code: 56882)

Did you know that single-use garments have a *lower* overall impact on the environment than reusable garments, largely because of the laundering process?

Or that many Kimberly-Clark Professional* products, such as the Kimtech Pure* G3 EvT Gloves, save space and reduce waste via environmentally responsible packaging that results in 50 percent more gloves per case (providing 33 percent more storage space) and 34 percent less waste?

Apparel, gloves and other nontraditional cleanroom waste, such as Kimtech Pure* masks, boots and hoods, can be recycled. You can divert these products (and more) from your waste stream and the landfill through **RightCycle* by Kimberly-Clark Professional***, the first large-scale recycling program for nonhazardous cleanroom waste. The used items are then turned into the raw materials to create eco-friendly products, such as colorful, plastic Adirondack chairs and benches, and trashcans. For more information, visit www.kimtech.com/reducetoday.

Conclusion

Wherever there are people, there is a risk of cleanroom contamination. People are the largest contributor to particle contamination in any cleanroom, accounting for 46 percent of all particle contamination.

To protect the purity of your scientific process, it's essential to use the most reliable and effective products available. The risks of cleanroom contamination are simply too great. Just a single event can be costly and disruptive to your operations. Why take that chance? Make sure to choose the products that will be most effective at helping to ensure process protection and reducing the chances of contamination.

About the survey

The survey was conducted by Penton Research on behalf of Kimberly-Clark Professional*. The online survey respondents included 977 subscribers of *Electronic Design*, *Medical Design*, and or *Power Electronics* magazines. Of these respondents, 242 reported involvement in electronic/semiconductor cleanroom environments. The information reported here is based on those 242 respondents. The data was collected from Jan.24-Feb. 4, 2014. While companies of all sizes were represented in the sample, respondents most likely represented companies with at least 1,000 employees.