

## ***The result of 90 minutes of soldering!***

The transition to lead free soldering in the electronics industry will reduce the strain on our environment. For the operator using lead-free, the hand soldering process got more dangerous. The lead in the solder wire is gone, but to get the solder wire to flow, more flux is required in the lead-free solder wire.

The higher temperature that is needed to create a solder joint of good quality using lead-free solder, will cause a stronger reaction within the flux and more particles will be created in the solder smoke. Lead-free soldering produces up to 250% more particles in the size 0.5-1.0 micron, which is the particle size that is most dangerous to inhale. In addition to particles, solder smoke can contain isocyanates, aldehydes and other unhealthy substances.

### **We performed the following test:**

We soldered with lead-free solder wire and a fume extraction nozzle placed near the source. We mounted a small net inside the fume extraction nozzle. Within 90 minutes, the net was totally clogged with soldering smoke particles. See picture at right.

This test distinctly shows the importance of using a spot suction even when soldering once in a while or just a few hours per day.

The particles clogged in the net are mostly condensed residues from flux. Without a filter system these particles will partly be inhaled by the operator and the risk of occupational asthma is increased. The remaining residues will be spread over the work object and the workplace.

Weller fume extraction systems will catch and eliminate the dangerous particles and gases created in the soldering process.

