

4.0 RESULTS AND DISCUSSION

4.1 Limitations

There were several complications that occurred and compromised the strength of this engineering field study. Initially, there were two organizations that had volunteered to participate in this study, but during the last week of February 2003 one of the two agencies backed out of the study citing concern about liability as their reason. This reduced the sample size to approximately ten participants solely from the second company. The power of the study was decreased by the lower sample size, though the decision was made to move on and collect data two days with the second company with the intent to gather the same number of samples originally proposed study.

Another slight change to the methods was to use two polycarbonate filters were employed as collective media, instead of button samplers. This change was made based on the advice of Dan Baxter of Aerotech Laboratory Inc. (the laboratory performing the analysis of the fungal spores).



Figure 1: Filters Attached to Tubing

An adapter was added at the end of the tubing so that two filters could be added. The tubing ran from the pump across the participant's back and over the right shoulder where it was clipped or taped in place.



Figure 2: Tubing Attached to Workers

The first day of data collection occurred on March 17, 2003 at a work site in Blacksburg, Virginia. It rained on March 16, 2003 and on the morning of the 17th it was misting, which ended by 10:00am. At the time that the pulmonary function tests were administered it was 57°F. The wood mulch was stored outside (as seen in Figure 3) uncovered so it was damp on the exposed surfaces the day of data collection.



Figure 3: Mulch Pile

The pumps were calibrated at the Environmental Health and Safety Services Department on the Virginia Tech campus and then transported to meet the participants. Once arriving at the landscaping headquarters and equipping the participants with the pumps, the pumps began to fail. The failure of five pumps resulted in only three personal air samples being collected that day (only eight participants were present on the first day of data collection). Along with the pump problems, there was also a concern that there was learning associated with the performance on the Pulmonary Function Test (PFT). According to the data, participants performed better overall, which is, there were more ‘normal’ readings of lung health, in the afternoon after working their full shift. This