

## Site 25 - Flexible Hose Report 2010.

### Brief history:

Site 25 is a 44 bed mental health unit which was built in the “design and build” era in 1993. It consists of four symmetrical wings spurring off from a centre core with a number of first floor offices situated above the reception area and a central plant room located near the main kitchen at the rear of the building.

The domestic hot water used to be heated by gas fired water heaters, which were replaced several years ago with plate heat exchangers. A chlorine dioxide unit was installed at the same time because of high Legionella counts.

Although the site is occupied 24/7 the cold water storage was removed from site approximately ten years ago and the site was left on mains water. The legionella counts over the years have been problematic and the chlorine dioxide unit has failed to address these high counts. The site has been flushed thoroughly every other day for many years now and all the identified dead legs have been removed (because of the type of build of the site, ceilings would have to be removed and walls partly removed to confirm that all the dead legs have been removed).

The high legionella counts used to be common in both the hot and cold water until the HWS system was modified and re-balanced when the plate heat exchangers were installed several years ago. Continual monitoring has shown that the problem with the high legionella counts in the hot water service has all but disappeared, however the problem with the high counts in the cold water service still persisted.

We believed that because the domestic water services and the heating pipe work are situated in close proximity in the same boxing with poor quality lagging throughout the site that this could have been a major contributing factor to the problem with the cold water service i.e. excessive temperature gain in the cold water service.

Because of the cost to address this problem and the limited budget, this issue was not resolved at the time.

### Flexible hose survey.

A flexible hose survey was carried out at the site as part of a trust-wide survey. Ninety four flexible hoses were found to have been fitted to wash basins etc that should have been hard piped in copper. A further twenty eight were found to be connected to dish washers, washing machines etc.

Water monitoring for legionella is carried out weekly from the four index / sentinel outlets at the end of each wing (these sinks are hard-pipe in copper). Because of the current alert on flexible hoses and the need for local information to assist with the risk assessment for these flexible hoses, two wash hand basins which were connected to the mains system with flexible hoses were sampled.

One sample from each wash hand basin was taken shortly after the whole site was flushed (samples LP4267 & LP4268 were taken after approximately one hour) A second set of samples were taken one week later (samples LP4274 & LP4275) approximately 30 hours after the site was flushed. All

the samples were taken to BS5667 pre i.e. the tap was turned on full and the sample taken immediately)

The flexible hoses were then removed (sample numbers **4284, 5, 6, 7, and 8**) and sent off for analysis and the outlets were re-piped in hard copper. The outlets were re-sampled after one week (samples 4289 and 4290) approximately 24 hours after the site was flushed. The chlorine dioxide levels remained at about 0.02ppm throughout the sampling period.

The flexible hose sample results are shown below along with the results from other samples taken. Flexible hose results are from one hot and cold connection from the mains to a wash hand basin and a hot, cold and a centre outlet of another wash hand basin.

All the hoses sampled were WRAS approved; they were all installed between two and five years ago.

#### RESULTS:

24/09/2010	4267	Not detected in 1 litre	Not detected in 1 litre	160 cfu/litre
24/09/2010	4268	Not detected in 1 litre	Not detected in 1 litre	Not detected in 1 litre
29/09/2010	4274	480 cfu/litre	Not detected in 1 litre	Not detected in 1 litre
29/09/2010	4275	Not detected in 1 litre	Not detected in 1 litre	>12000 cfu/litre
13/10/2010	<b>4284</b>	>12000 cfu/swab	Not detected cfu/swab	Not detected cfu/swab
13/10/2010	<b>4285</b>	>12000 cfu/swab	Not detected cfu/swab	Not detected cfu/swab
13/10/2010	<b>4286</b>	>12000 cfu/swab	Not detected cfu/swab	Not detected cfu/swab
13/10/2010	<b>4287</b>	160 cfu/swab	Not detected cfu/swab	>12000 cfu/swab
13/10/2010	<b>4288</b>	Not detected cfu/swab	Not detected cfu/swab	>12000 cfu/swab
20/10/2010	4289	Not detected in 1 litre	Not detected in 1 litre	40 cfu/litre
20/10/2010	4290	Not detected in 1 litre	Not detected in 1 litre	80 cfu/litre

#### Remedial actions

In view of the seemingly high counts and the lack of national guidance or data for hose testing and the recommendations of the recent NHS alert on this subject all of the flexible hoses were removed from the sinks and hard piped in copper. The hoses on the washing machine dishwashers etc. were replaced with a suitable alternative and a double check valve installed upstream. Almost immediately the problem with the high LG counts disappeared. The site was continually monitored for two months, after which time flushing was reduced to twice weekly then after a further two months of clear results was reduced to weekly flushing.