

# Dodgy Towers, Spas and Showers

James Rudman, Environmental Health Officer,  
Birmingham City Council



James began by telling us a little bit about his career: starting with his training at Northampton, moving on to Cannock in 1998 and Birmingham City Council in 2008.

## **Edinburgh Outbreak:**

In his introduction, James gave a brief update on the recent outbreak of Legionella in Edinburgh. There were currently 82 confirmed and suspected cases reported. The number of outbreaks hopefully has now peaked and will decline as time goes on. An Improvement Notice, covering the management of legionella, has been given to a distillery in the south-west of Edinburgh. More than a dozen cooling towers were turned off during the investigation.

## **Legionella is not just about Cooling Towers.....**

There are other sources that need to be considered: including fountains; spas; showers and even potting compost! James told us about 4 people who developed Legionella symptoms whilst bagging compost.

## **What Role does Birmingham City Council (BCC) Play?**

- Environmental Health Officers (EHO's) work in partnership with the H.S.E. during investigations. EHO's advise on the location of cooling towers and have mapping software produced by the HSE/HSL, which pinpoints cases of legionella on a map. The map can be scaled down to identify where people live and work in relation to a cooling tower.
- When a suspected outbreak occurs, Environmental Health is alerted by the Health Protection Agency (HPA).
- BCC keeps a register of notifiable devices, that is, cooling towers etc. which are potential sources of legionella contamination. James explained that although BCC 'holds' and manages the register, it is not their responsibility to make sure that the information it contains is correct/updated.
- Environmental Health (EH) will have useful background information via past inspection history.

- EH is authorised under the Public Health (Control of Diseases) Act and can require the cleaning and disinfection of towers etc. (the HSE has no authority under this Act).
- EHO's of course, have to consider their own health and safety and so the testing work is subbed out to organisations which specialise in testing/analysis work.

### **What Stance Does BCC Take?**

In Birmingham there are 250 towers and evaporative condensers registered. 14 of these fall within the enforcement responsibility of the Environmental Health Dept. BCC take a proactive approach to avoid a situation such as that in Edinburgh occurring. 2012/13, BCC will be concentrating on the legionella risks associated with showers and spas. Cooling towers will be inspected again.

### **Where did it all begin.....?**

It was first identified during an outbreak in Philadelphia in 1976. A World War Two veteran's convention was held in the Bellevue Stratford Hotel in Philadelphia. The source of the outbreak was the air conditioning unit in the Hotel lobby. Amongst the mature veterans, there were 224 infected and 34 deaths. The legionella pneumophilia bacteria was found to be widespread within the Hotel, and ideal temperature (35C – 46C) conditions were recorded. Often, (unlike the Philadelphia case), there is some distance between the source and the outbreak, and this necessitates lots of microbiological tests to identify the source.

### **How does Legionella Pneumophilia (LP) cause infection?**

LP lives in water, and water needs to be agitated to produce a droplet form. The droplets then need to be breathed in. LP attacks the respiratory system. There is no person to person spread. The time delay between exposure to LP and the manifestation of symptoms is between 48 hours and 10 days. There is a 5-30% fatality rate during outbreaks.

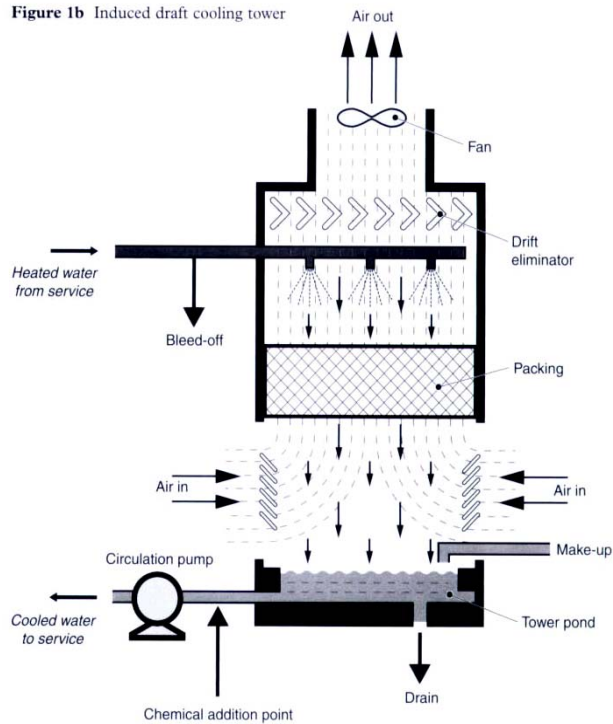
### **Who is most at risk?**

Generally, more mature men and young children are at highest risk. In particular, those persons with less developed or compromised immune systems.

### **How do Cooling Towers 'Work'?:**

James explained that there are two types of cooling tower commonly found in Birmingham:

Figure 1b Induced draft cooling tower

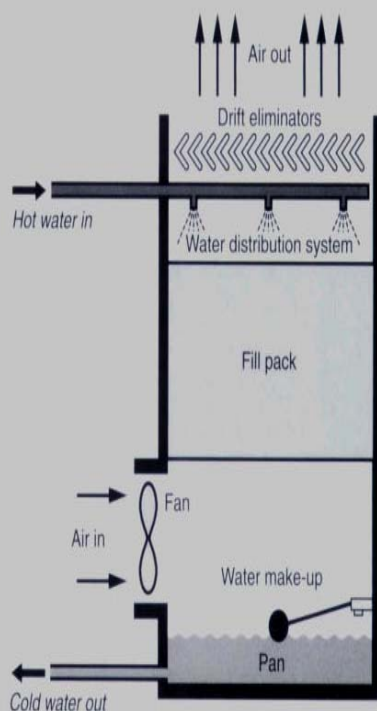


There is a pan or 'pond' at the bottom of the tower. Drift eliminators prevent contaminated water droplets 'escaping' into the atmosphere.

Biocides containing either bromine or chlorine (commonly switched between the

two to make sure that the water is 'clean'), are used for cleaning purposes. One drawback is that the biocide used is corrosive and will therefore attack metal parts. Bacteria will commonly 'hide' and collect in corroded areas. To avoid this, an inhibitor is applied to prevent corrosion occurring.

Figure 1a Forced draft





### **What is expected of the Employer?:**

BCC expect the employer to comply with the requirements of L8 'Legionnaires' disease: The control of legionella bacteria in water systems Approved Code of Practice and Guidance' ISBN 0-7176-17772-6. Employers should have completed a risk assessment, and a 'Management Plan'. James commented, in his experience, that employers generally employ consultants to carry out risk assessments and audits. Further, a managing agent is employed to carry out a weekly check on water quality using a dip slide. Cleaning and disinfection is recommended every 6 months.

### **How are problems identified?:**

James included a number of slides in his presentation illustrating the effects of corrosion.

- EHO's look for a green algae stain on the tower, which indicates microflora and corrosion. Sometimes a green stain also indicates that the biocide pump is not operating.
- 'Dead legs' in pipework is an issue in hot and cold water systems. Water will 'sit' and stagnate in an area of pipework where there is no flow.
- EHO's look for gaps in the drift eliminator, which allows water droplets to escape into the atmosphere.
- Nesting pigeons and uncovered water tanks ring another warning bell.

### **What happened in the Barrow-in-Furness case?:**

James commented that he comes across the Barrow-in-Furness failings during the course of his work. He reminded members that the failings at Barrow briefly were:

- 1. Lack of Communication** between the managing agent and the water treatment consultant.
- 2. Failure to act** on HSE Recommendations.
- 3. Not considered to be a risk .**

4. An attitude of 'I thought the water treatment company dealt with all that'.
5. Person on site, e.g. the caretaker, does the basics, but not aware of legionella, the risks and sampling routine.
6. **Individual Failings.** Section 7 of HASAWA of course was important in the Barrow case, and individual failings were attributed to the woman responsible for managing the water treatment process at the Leisure Centre.

### **What about spa pools?:**

The problems here include.....

- People often don't wash before entering the spa pool.
- Additional filters are required.
- Some chemicals used can be quite unpleasant, and James mentioned a case he investigated in 2009. The lifeguard had dosed the spa because readings taken indicated that the chlorine levels were low. After dosing he threw the scoop into a sink, where the chemical mixed with another chemical to produce chlorine gas. The lifeguard was overcome and the building had to be evacuated.

### **....and showers?:**

Showers are more of an issue for BCC, especially those within office blocks. The control for showers mainly consists of keeping the water temperature at 60oC plus. With such high temperatures, scalding is a risk and thermostatic mixing valves (TMV's) need to be installed at the point of water delivery. The general guideline is that water is heated to 60oC, stored above 50oC and delivered at a lower and safer temperature.

## *Members' Questions*

**Mike Morton from Dudley Metropolitan Borough Council** said that schools were his area of responsibility and they often have a fondness for ornamental fountains. These fountains are never maintained or cleaned. What is BCC's advice here? James replied and advised that first of all a risk assessment be carried out of all such ornamental fountains because they are definitely a source of legionella. Referring to L8, action should be taken on the basis of the risk assessment findings.

**George Allcock BHSEA Management Committee Member** commented that before he retired, his work required him to visit other countries, where risk awareness of legionella was zero. James commented on the fact that a good proportion of the 300 to 400 cases of legionella, came from abroad. George further commented on the fact that the six findings (listed above) revealed in the Barrow-in-Furness case are relevant and can be applied to all sorts of health and safety issues – not only legionella.

**Bob Hope, Health and Safety Adviser** queried the location of temperature readings. James replied that the readings must be taken from different places in order to get a more accurate 'picture'. Bob wondered why legionella was not occurring more frequently? James replied that there are so many variables that influence an outbreak. Weather conditions are an important factor and location (i.e. if there is a school nearby, the risk will be greater). Bob wondered whether there is an issue with biocides entering the drinking water supply and causing problems? James said that would not always be a problem because, for example, the biocides in hotel premises would be of food grade.

**A Member** commented on the scalding risk. James said that the scalding risk must be taken into account within the risk assessment.

**Julie Earles of GKN** commented that as a shower user, what precautions can an individual take to reduce the risk of legionella? James recommended that the individual should look out for any signs of algae forming, and always look for a chlorine like smell which should indicate that the water has been doused. Running the water for a short while before stepping under a shower would run off any stagnant water. Avoiding showers which are visibly unclean is a wise thing to do!

Another Member drew comparison between the Management Plan mentioned in L8 and the requirement to complete an Action Plan in compliance with asbestos legislation. James replied that L8 refers to a competent person employed to take tests in a legionella outbreak situation. Without a nominated competent person, the HSE/Environmental Health Officer may prosecute.

This concluded Member's Questions and the audience was asked to show James their appreciation in the usual way.