

THE 12TH TRIENNIAL WORLD PLUMBING CONFERENCE MELBOURNE AUSTRALIA 2019

DAVID HARPER

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PUBLIC HEALTH OFFICER FROM THE U.K.

ENG TECH-FIHEEM-FWMSOC-MCIPHE-MIIE-MASEE-MIET-HFSOPHE

FREEMAN OF THE CITY OF LONDON

LIVERYMAN OF THE CITY OF LONDON BY THE WORSHIPFUL COMPANY
OF PLUMBERS.

WHERE DO I START THE STORY FROM THE BEGINNING IS THE BEST

- APPRENTICE ELECTRIAN
 - POLICE OFFICER
 - ELECTRIAN UKAEA
 - HEATHROW AIRPORT UK
- ASHFORD DISTRICT GENERAL HOSPITAL
- KINGSTON DISTRICT GENERAL HOSPITAL
 - PUBLIC HEALTH ENGLAND NOW CALLED
 - AND THEN WOW IT ALL HAPPENED



THIS IS WHERE IT
ALL BEGAN IN THE
UK

HOW, THE THEN NAMED, KINGSTON CONTROLS CAME INTO BEING AND ARE USED NOW AND WORLD WIDE ACCEPTED

- WEDNESDAY 11TH JULY 1979 AT KDGH ESTATES HQ
 - MEDICAL SIDE OF THINGS
 - LABORATORY SIDE OF THINGS
 - ENGINEERING SIDE OF THINGS
 - THE PUBLIC HEALTH SIDE OF THINGS
 - THEN THE BIGGER PICTURE
- BUT HOW DID THE LEGIONELLA SITUATION FIRST START



The Chartered Institute of Plumbing and Heating Engineering

*Founded in 1906, the professional body
for those in the plumbing and heating industry*

This is to certify that
David Harper

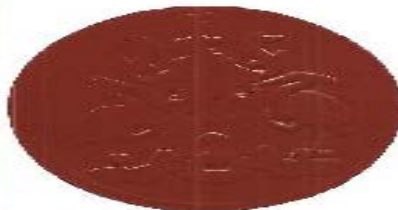
has this day been duly enrolled as

Member

of the Chartered Institute

Dated the **Sixth** day of **September 1988**

The Seal of The Chartered Institute of Plumbing and Heating Engineering
was this day affixed in the presence of:



President

Chief Executive Officer

Signature of Feller

This cert. Certificate is the property of the Chartered Institute of Plumbing and Heating Engineering and is issued subject to annual renewal of membership and ceases on resignation or death, vide Regulation 20. Anyone relying on this certificate as a statement of competence should seek to satisfy themselves that the above named person is in possession of a current membership card.

RULE ONE

KEEP THE WATER HOT 50-60 centigrade

KEEP THE WATER COLD below 20 centigrade

KEEP THE WATER CLEAN

KEEP THE WATER MOVING

YOU WILL NEVER GET RID OF THE BUGS, DO THE FOUR THINGS ABOVE AND YOU WILL
REDUCE THEM TO A LEVEL THAT THEY WILL NOT HARM YOU (IN GENERAL)

RULE TWO

DON'T DESIGN THE PROBLEM IN

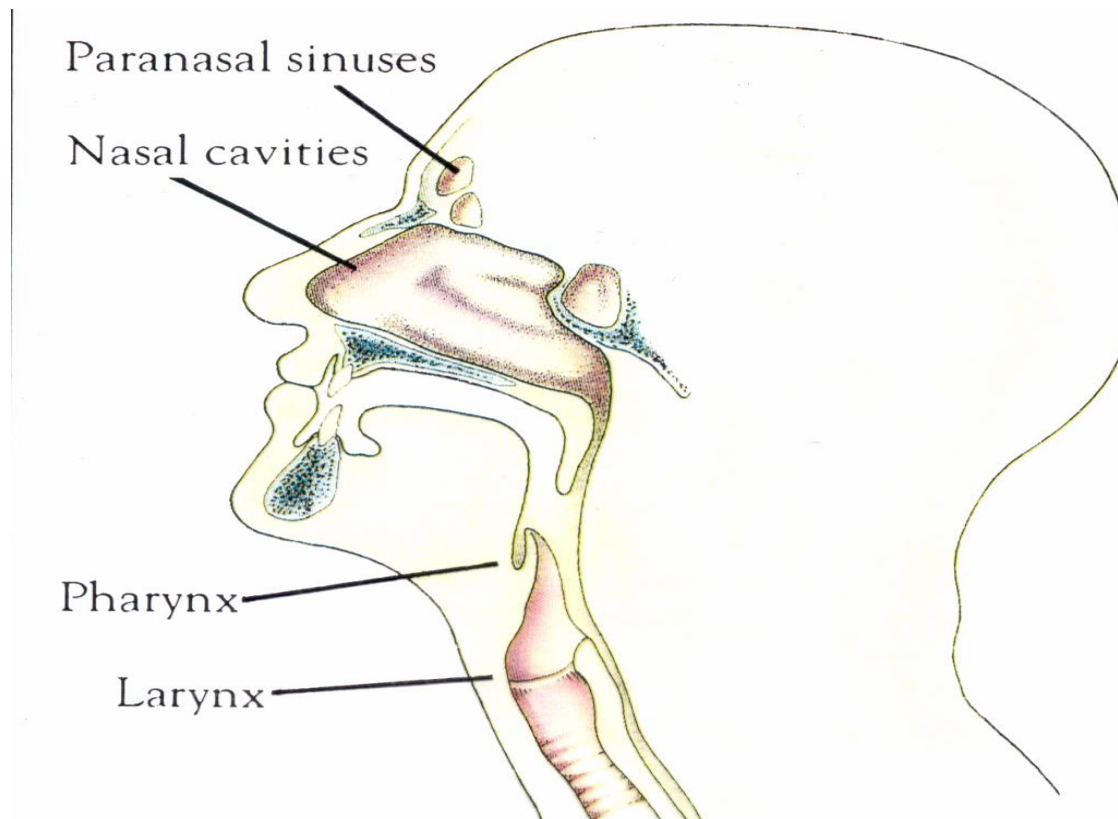
MAKE THE DESIGN SIMPLE

ENGINEER THE PROBLEM OUT

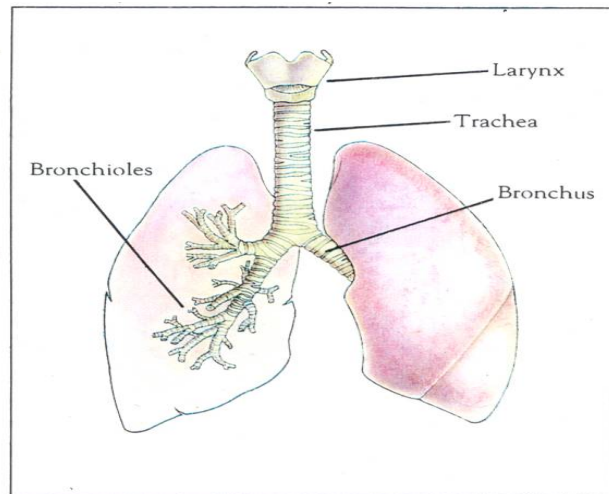
WHERE DID IT ALL START

- JULY 21-24TH 1976
 - WHERE USA PHILADELPHIA
 - BELLEVUE STRATFORD HOTEL
- AMERICAN LEGION 200TH BIRTHDAY
- THE LEGIONEELLA IT`S SELF(the bug)
 - WHERE DOES IT COME FROM
 - HOW DOES IT GROW
 - IT`S FOOD SOURCE`S

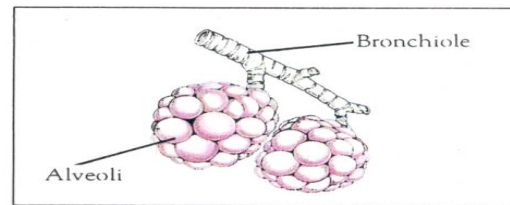
Legionella into your lungs four ways it can happen



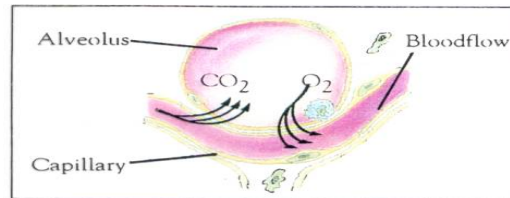
The lungs



(Fig 2)
As the air passes down the trachea it moves into both bronchi before circulating into the bronchioles and then finally reaching the alveoli



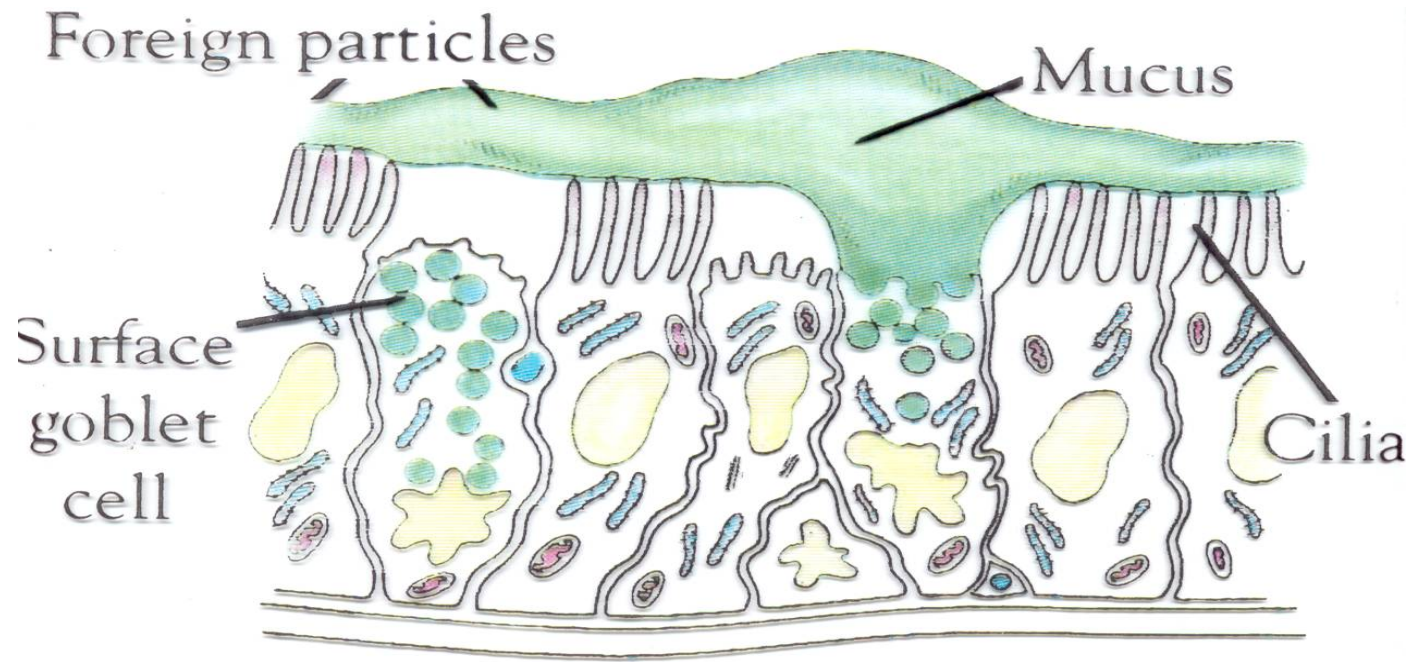
(Fig 3)
Each bronchiole contains clusters of airsacs or alveoli, which facilitate the exchange of gasses between the lungs and the bloodstream



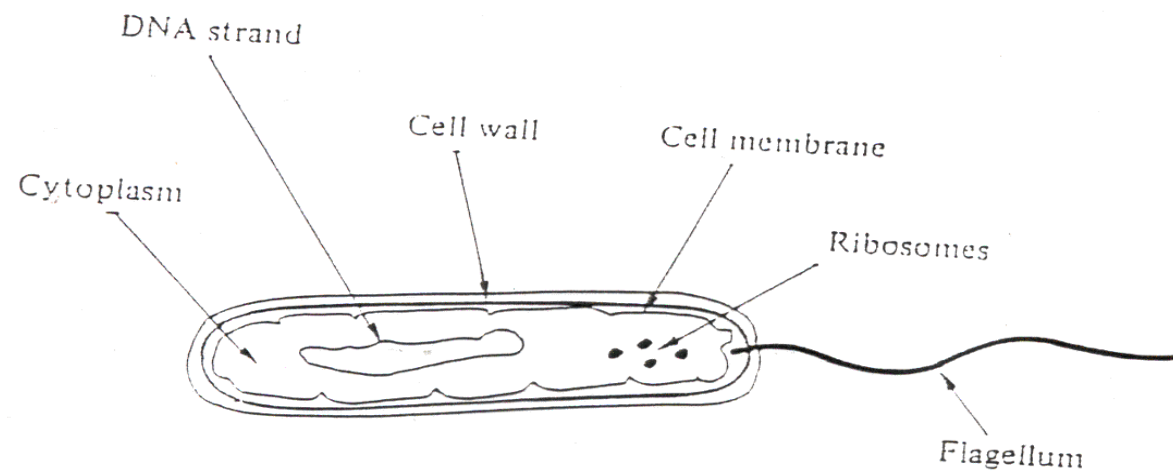
(Fig 4)
The very thin wall of the air sac, which comprises of a one cell layer of epithelium, allows for the exchange of gases between the alveolus and the capillaries. The alveolus accepts the carbon dioxide from the blood in exchange for passing on oxygen into the bloodstream

ALVEOLI

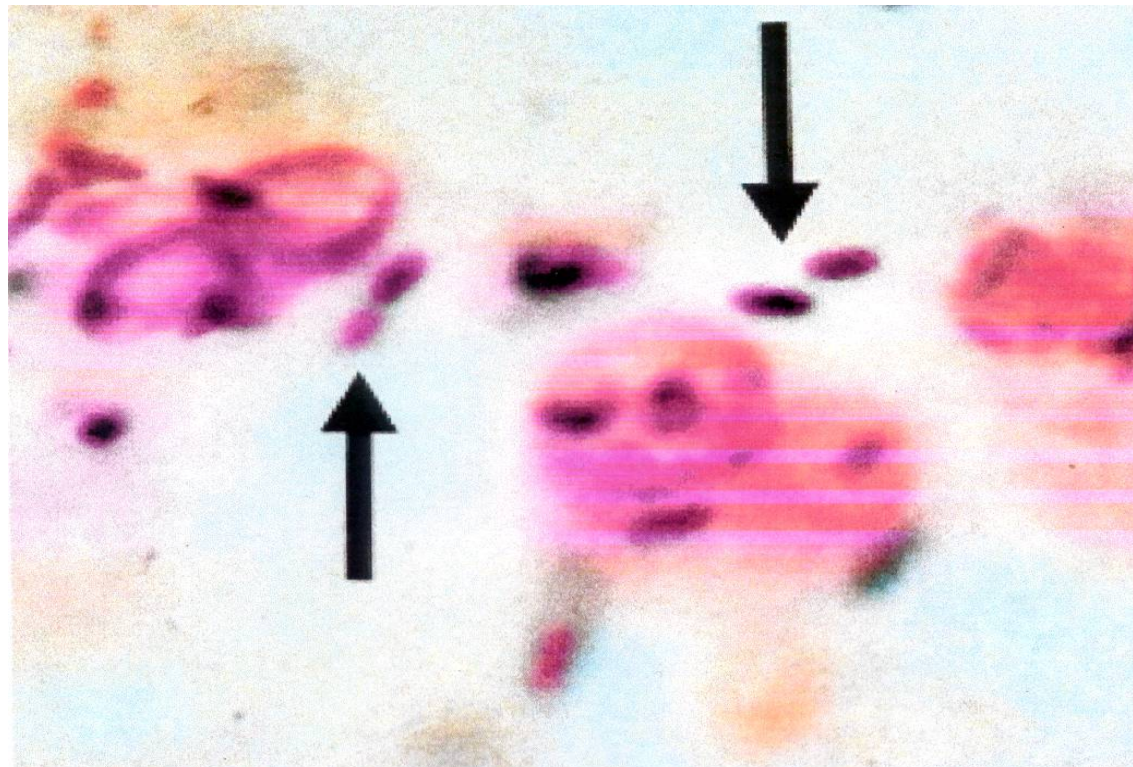
The lungs and pleurisy



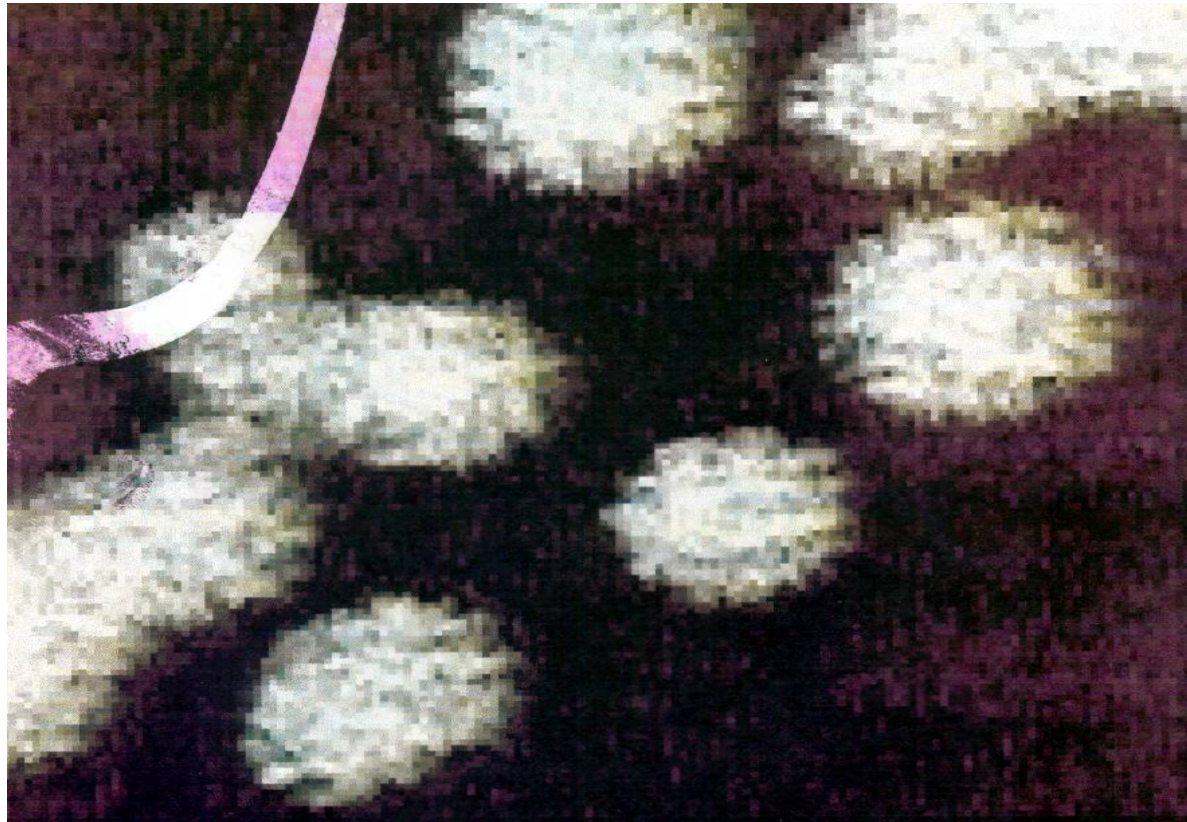
Legionella bacteria



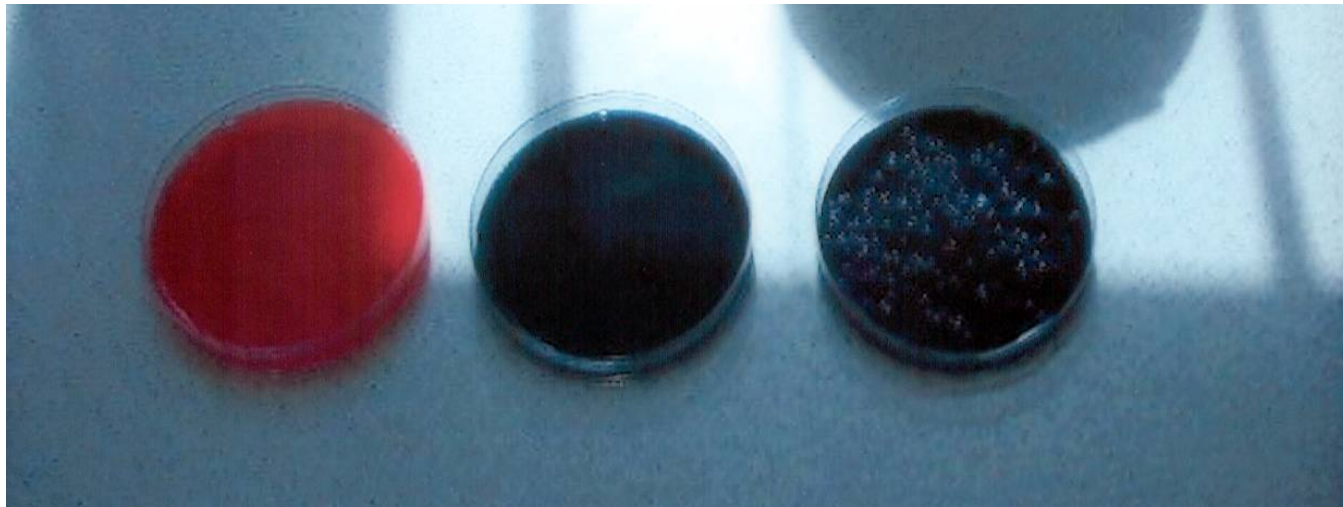
Legionella in lung tissue



Legionella bacteria on a plate in a laboratory



The blood and Legionella growth media plates



THE LAW(UK)

- HEALTH AND SAFETY AT WORK ETC ACT 1974
- CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH
- APPROVED CODE OF PRACTICE AND REGULATIONS L8
 - HSG 274 PARTS 1-2-3 AND AMENDMENTS
- PSEUDOMONAS AERUGINOSA AND GUIDANCE
 - CIBSE TM 13
- HSE, GUIDANCE TO DUTY HOLDERS
 - AND MANY OTHERS

Legionella in a drinking water cistern(tank)



Pigeons causing Cryptosporidium in children in a school



Stagnant water in a drinking water cistern



Spiders in a drinking water cistern



Sparrow in a drinking water cistern



No mesh in overflow pipe



NEBULIZERS WHICH CAN CAUSE PROBLEMS



THE CONTAMINATED WATER DROPLETS





THE WATER
THAT COLLECTS
IN THE JOINTS

Dump valve from a shower now banned



New type of “two pipe” shower



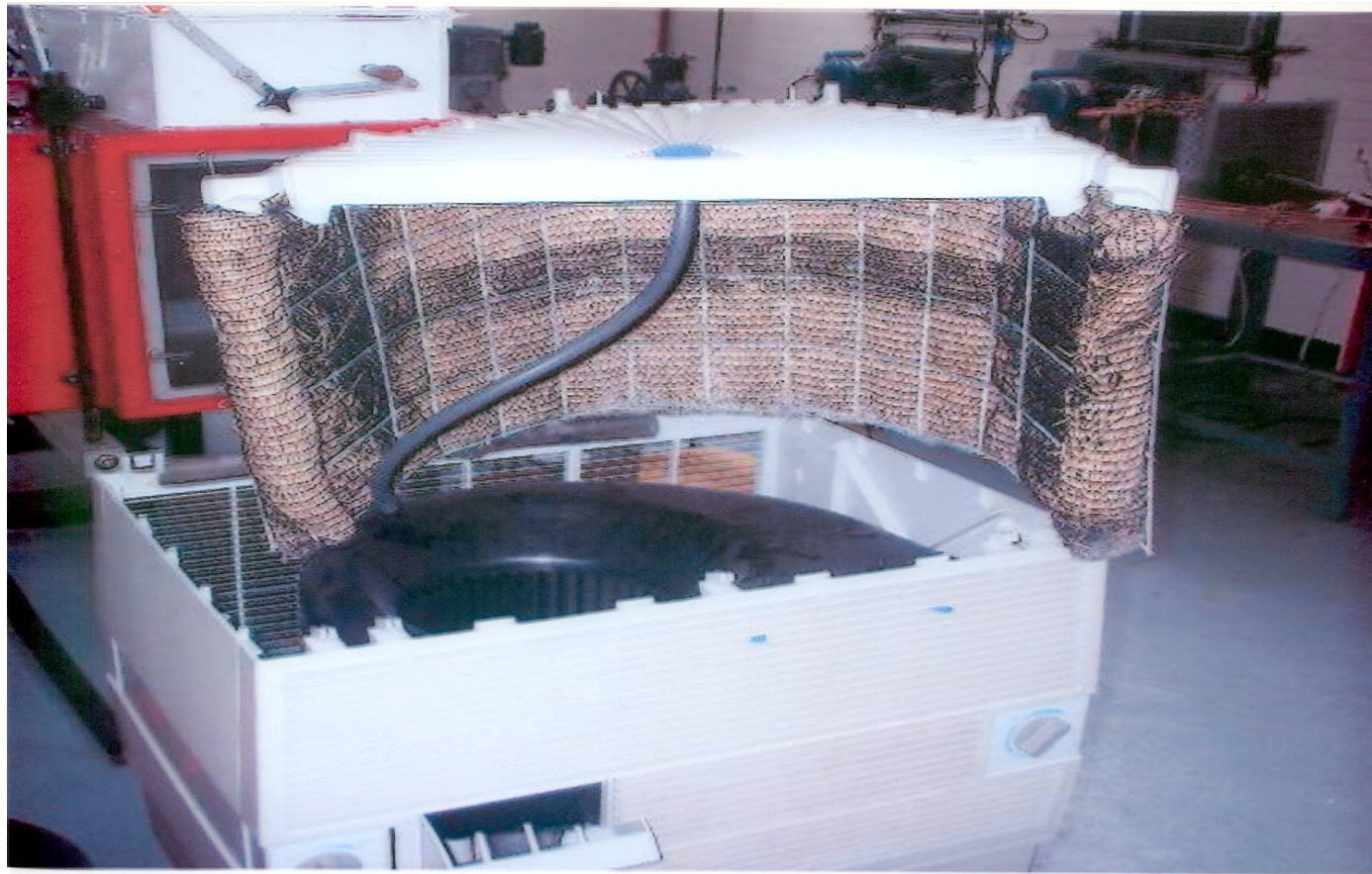
Spray nozzles which can caused Legionella
and other problems



Break tank on a point of use water heater



Humidifiers which have been banned from hospitals



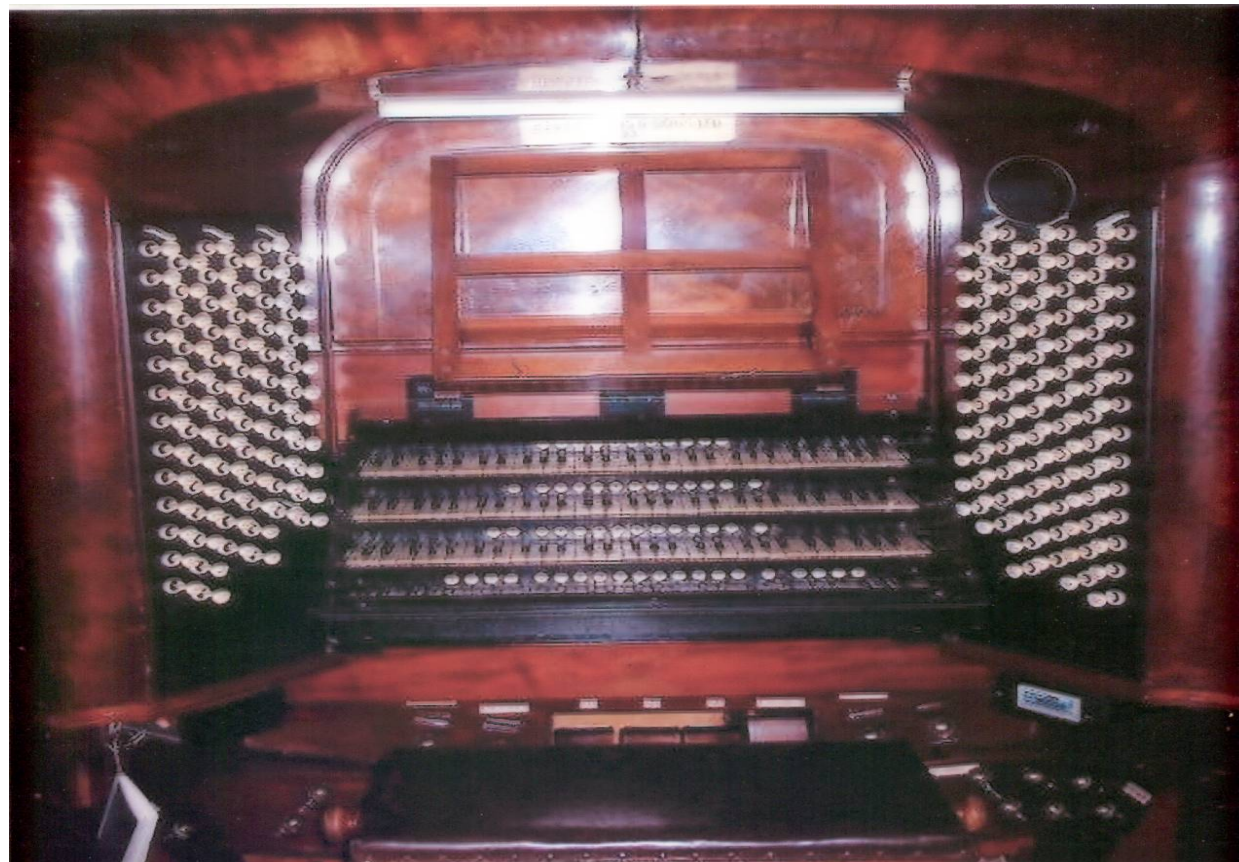
Fluorescent tube crusher



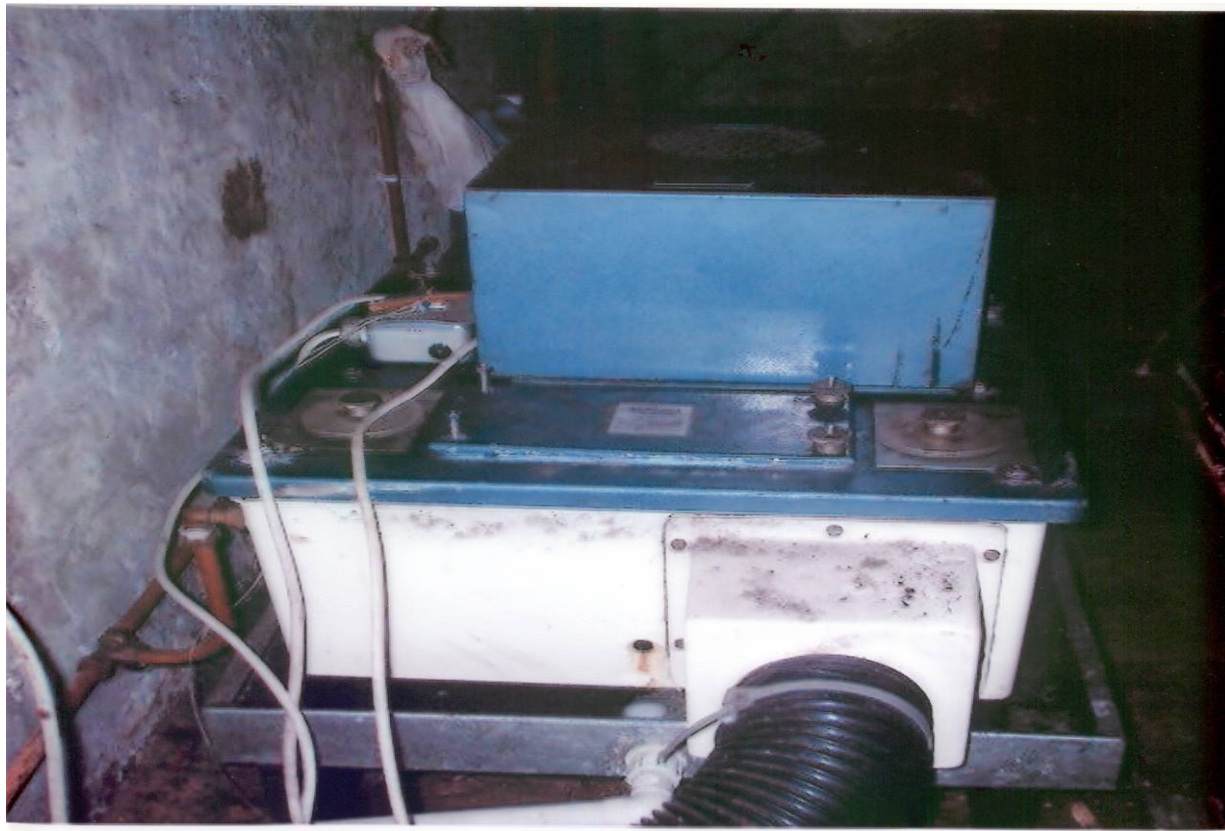
Swan neck or “u” tubes implicated in Legionella “out breaks”



Cathedral Organ and Legionella



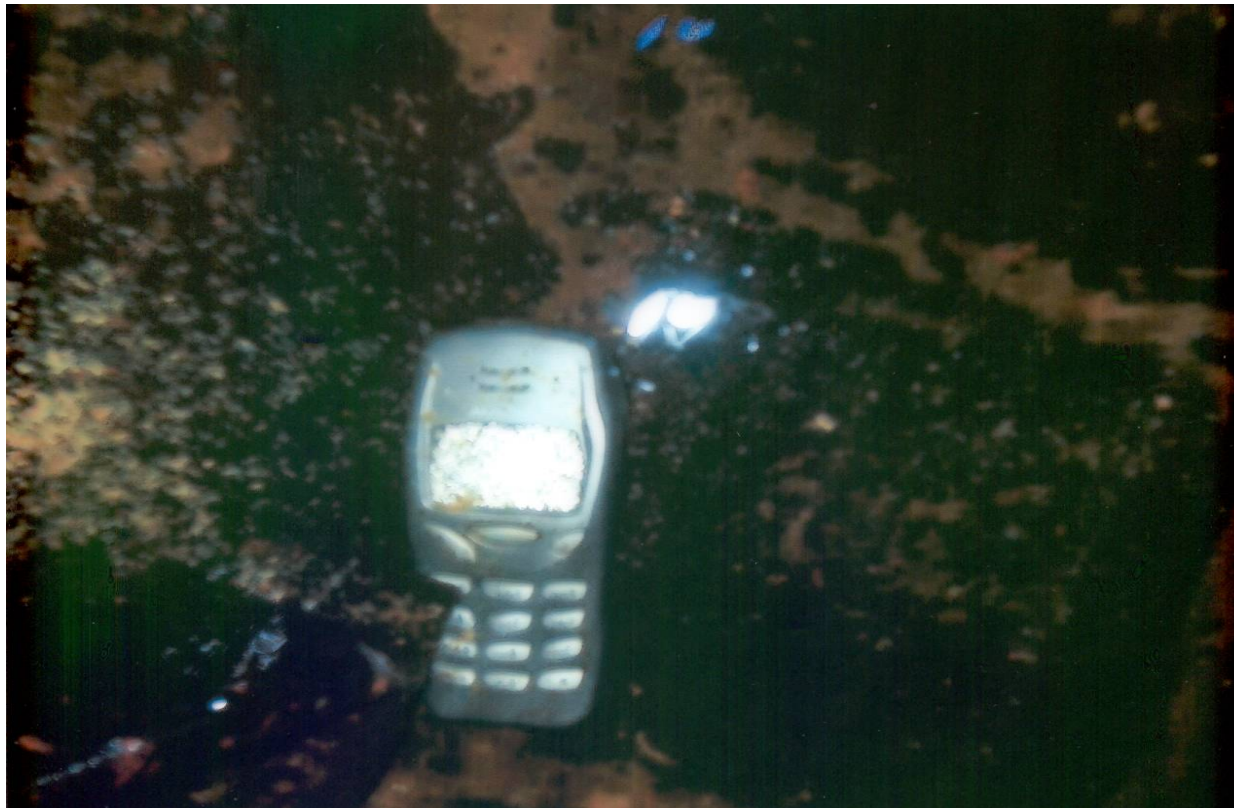
Organ humidifier



Bio-slime inside the humidifier



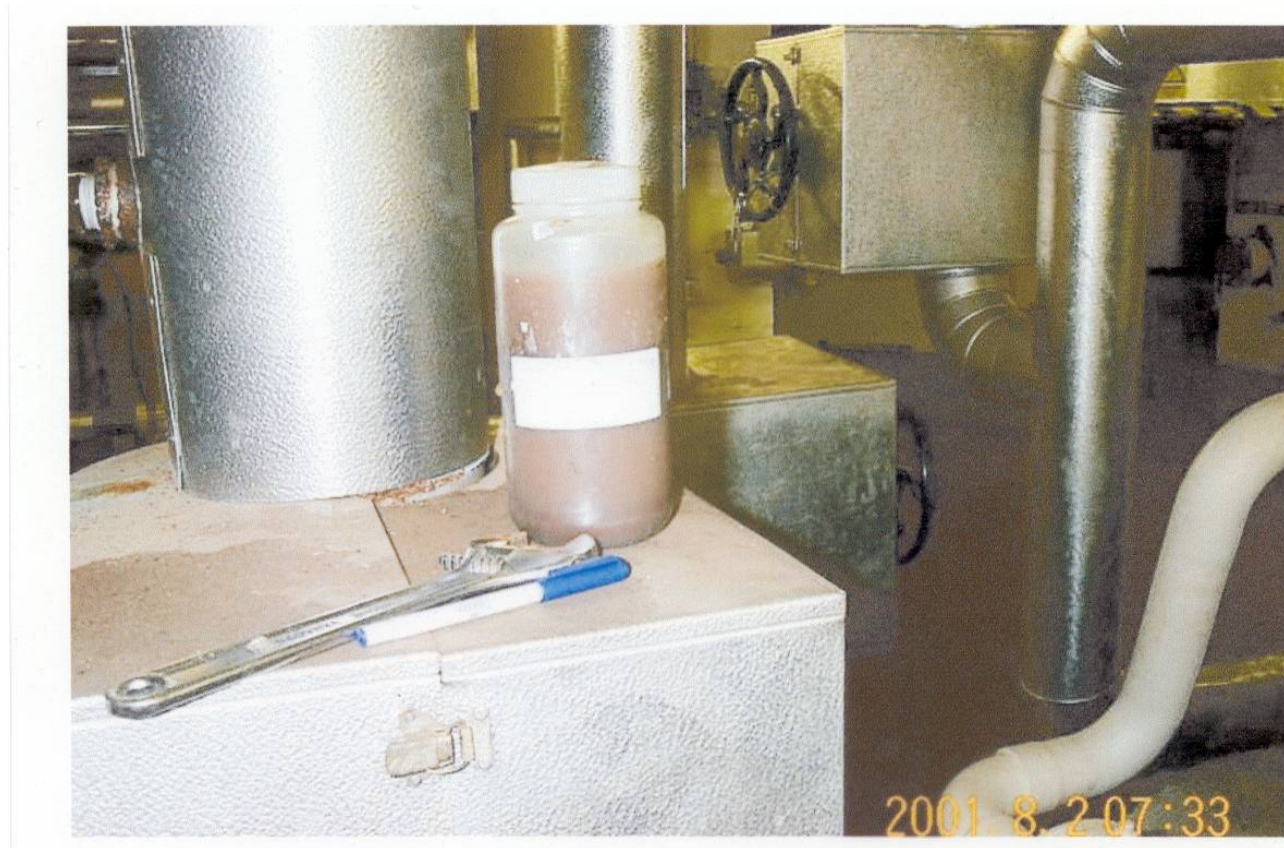
The first one in a drinking water cistern



The second phone in the water cistern




This calorifier was flushed out every month?





A LIVING WALL



KEEPING DRINKING
WATER COLD THE
DIFFERENT WAYS IT
CAN BE ENGINEERED

THEN THIS MASTER PIECE OF PLUMBING

11 OUT OF 10 FOR PROJECT DESIGN TEAM

11 OUT OF 10 FOR INSTALATION

THIS IS HOW THEY HEATED THE WATER TO WASH
THERE HANDS

LEGIONELLA CONTROL FOR HAND WASHING WITH HOT WATER



THANK YOU ALL FOR LISTENING
DAVID HARPER (UK)
THE RED ADARE OF THE BUG BUSTERS
(named by others)

- MOB 07885 - 411778

- Q&A if required