Radio interviews on health aspects of plumbing

Dr Jamie Bartram, Coordinator, Water, Sanitation and Health, World Health Organization
Mr José Hueb, Water, Sanitation and Health, World Health Organization
Mr Russ Chaney, Executive Secretary, World Plumbing Council

1. THE PROBLEM

Q. Why is plumbing the public health issue of the future?

Its not only a problem of the future. It's a problem now. Half of the world population has access to piped water supply and the number of people worldwide using piped water is increasing rapidly. Currently 3.2 billion people around the world have a drinking water plumbing system within the household, and 1.8 billion people are served with drainage facilities discharging to some sort of sewerage system. In other words the proportion of people around the world having access to plumbing systems is extremely small. Only 50% have access to drinking water through piped system, within the household itself and 30% having draining discharging to public sewers. Precisely because of this low coverage figures, the prospects of growth are huge. It is crucial that the millions of future plumbing systems, be designed, constructed and appropriately maintained so that health concerns are taken into account and existing systems are maintained or modified to reduce the risks of contamination and ensure that health benefits of the systems are obtained.

Q. What are the main causes of the health problems?

The main causes of the health problems are the micro-organisms - the pathogens that cause disease or the chemicals that make their way into the system. The micro-organisms can be bacteria, they can be viruses that can be protozoa, most of them lead to diarrhoeal diseases or diseases related to diarrhoea. The chemicals can be many and various. They can be linked to diseases like cancer, lead, and cause reduction in IQ attainment. The hazards can also be things like hot water, scolding especially in elderly and the very young. Although those are the actually the cause the adverse health effects - they are not really the cause of the problem. The real cause of the problems are failures in the plumbing systems that lead to contaminated water being drawn into what ought to be safe supplies. Very often this arises because of simple problems. Things like backsiphonage where dirty water is sucked back into the clean water system; cross connections; simple errors in plumbing that need not occur. Leakage in drainage, contamination of domestic tanks. The key thing about all these problems is they can be prevented, and prevention is far cheaper than cure and contributes more to preventing disease and promoting health.

Q. What are the diseases occurring because of failure of plumbing system?

If we look at the problem of the diseases because of failure in plumbing systems where do they arise? Some arise because pollution gets into water systems and often that pollution is simple failures in sanitation. Human excreta makes its ways into water supplies by one of

several different means. That leads to transmission of diseases like diarrhoea, cholera, dysentery and so on. But that is not the whole picture. We also see that sometimes other groups of organisms can grow in poorly designed, poorly constructed and poorly maintained systems. They often lead to completely different groups of diseases - legionellosis - a respiratory disease not something we associate with drinking water, but closely linked into failures of good plumbing practice. And finally well documented through history we have the substances that actually make themselves into water from the very material we use to deliver safe water. Since Roman times there has been clear documentation of use of lead for example for pipe work and yet now we know very well that that lead makes its way into water - makes it way into the water that is consumed. Particularly for the young has a dramatic impact on the eventual IQ attainment. These things again are simple to remedy. Other materials are available. Systems for certifying these materials can be implemented. The net saving for doing those things are far greater than the cost.

Q. Can you give me an overview of Health Aspects of Plumbing (HAP)?

The HAP was developed in part in response to the United Nations International Decade for Action: Water for Life. In response the WHO and the World Plumbing Council developed HAP with an eye towards regulators in developing countries. HAP contains all the essential provisions necessary to design, install, inspect and maintain plumbing systems. Sprinkled throughout are the tentacles of health logic which makes the importance linkages between plumbing and public health while providing a road map to protecting safe drinking water and sanitation systems.

II. The health issues

Q. How can plumbing protect health?

Good plumbing is one of the key building blocks in protecting and promoting health. If a system that provides water through a house or through a dwelling or in a public building is designed, built and managed properly is critical in ensuring the health of individuals that live and work there. In the developed world we see very clearly that as other causes of water related disease are progressively controlled so the importance of plumbing is increasingly seen in outbreaks of disease. Many of those outbreaks are very small and may not be detected. The kinds of diseases most frequently are diarrhoeal disease but also outbreaks of legionellosis, disease caused by different viruses, and poisonings because of substances like lead that makes itself into water from the plumbing system itself. And we see injuries like scolding. The important thing is that plumbing is the solution to those problems; its not a health risk in itself.

Q. Why is plumbing very important to health?

Plumbing was important to health yesterday. It is important to health today and will be even more important tomorrow. If we look back at history we see that simple actions on simple plumbing errors have often protected public health. In some of the first reports of what we would now describe as public health action in the industrialized countries in the mid 19th century in Europe. Simple measure such as cutting unsafe pumps and wells made real impacts on preventive then massive outbreaks of disease like cholera. Today if we look at the statistics

from the countries good outbreak investigation we see an increasing proportion of disease outbreak that arise because of problems in distribution systems, and domestic plumbing. That occurs because we are progressively fixing other areas of concern so this is now coming to the fore. In the developing world we see that same pattern as we progressively tackle other causes of pollution, other failures in our systems for delivering safe water especially those systems that target relatively disadvantaged populations so the importance of plumbing being brought ever further to the fore.

III. The risks

Q. How big is the population at risk, and how can people can benefit from better plumbing?

In 2002 the world broke the barrier of 50%, half of its population supplied by water, drinking-water at home through pipes systems. That is a tremendous achievement across the planet.. That same year, we estimate that 31% of the population had piped sanitation facilities as well. Those people can benefit from the health improvement that is possible through effective plumbing. Unfortunately in practice not all those systems are safe. Not all are reliable. Not all of them succeed in their goal of delivering safe water. What we need to do is ahead of the curve and improve plumbing systems so that they deliver this fundamental protection for public health.

Q. Which countries are most affected?

All countries with extensive piped water systems are the most affected, and especially those countries where piped systems are poorly designed, not well operated and maintained, with problems such as cross-connections or backsiphonage. For example, countries where piped distribution systems are run according to intermittent schedule are more likely to suffer from the effects of poor plumbing practices. This is the situation of the majority of cities in developing countries where the supply occurs during a certain number of hours a day. Because of the instability of the supply, most household are obliged to store water in domestic tanks and this is a point of health vulnerability. The lack of good operation practices - washing and disinfecting tanks regularly. The lack of protection mechanisms to avoid contamination are common problems in developing countries. Another typical problem in developing countries is the lack of sound codes of practice for plumbing systems. The reinforcement also which do not exist. However the problem is not confined to developing countries. Developed countries suffer from non health oriented plumbing. Scolding and microbial contamination have been reported in plumbing systems of many countries of the developed world.

Q. Why is plumbing an issue for both developed and developing countries?

The spread of disease can occur as easily in both developed and developing countries as a result of improper plumbing system design, and maintenance. Therefore the Health Aspects of Plumbing (HAP) in both developed and developing countries especially when one considers the accelerated growth of urbanization in many developed and developing countries.

IV. What is being done: solutions

Q. What is WHO doing in this field?

The World Health Organization has recognizes the potential health risks of poor plumbing practices. In collaboration with leading research centres and professional associations. WHO is working to increase evidence and raise awareness on the links between plumbing and health, and to give guidance on the safe design, operation and maintenance of plumbing systems.

Q. How will this guide help people and what will be the value?

HAP contains all the basic principles from which the science of plumbing can be applied, the design, installation and inspection and maintenance of plumbing systems form the foundation of health systems of plumbing. Accordingly, plumbers in both developed and developing countries now have an authoritative document that enables them to design and install systems based on current day technology.

Q. An example of how HAP is helping plumbers in their daily lives?

An example of that would be the basic necessities of providing public water through a piped system from water supply into the habitat. The provisions of HAP contain all the necessary elements in order to do that installation consistent with recognized international standards.

Q. What is the value of Health Aspects of Plumbing for regulators?

HAP is written so that regulators possess the basic ability to draft and implement a regulatory system that provides for the basis for public health and safety. HAP also provides guidelines enabling regulators to regulate all sectors of the plumbing industry - that is to say designers, contractors, inspectors, and manufacturers of plumbing products. Its this regulatory system that serves as the backbone in regulating all levels of plumbing system application

Q. What is the value of this guide for the research community?

HAP provides an essential. element in that it provides an up to date guide that contains provisions primarily targeted towards developing countries. Consequently, researchers can now evaluate and predict future needs of regulators whom are responsible for public health through the implementation of safe plumbing systems.

Q. Is there any major reference document on plumbing and health?

Let me say that this is no the only document dealing with this issue. Several documents prepared by credible and serious institutions available now. We really want to include this document which is called Health Aspects of plumbing - prepared jointly by the World Health Organization and the World Plumbing Council and with the contribution of experts from around the world. This has just been published as a solid guidance and authoritative source of how to construct health supporting plumbing systems. We hope this document will make a meaningful difference in the way plumbing systems are designed and constructed especially in developed countries where the needs are greater. We hope that the recommendations we

have in this document will result in tangible health benefits to the population served by these facilities.

Q. What are the linkages between health and plumbing and was is this an issue in the long-term?

This is an issue for the future because there is the possibility that from now on considering we have the Millennium Development Goals, and we have target number 10 which is aiming at having the proportion of people not served with improved water supply and sanitation facilities by having this target in mind and many organization working towards this target we believe that the investments in the water and sanitation supply sector and according to the water decade - water for life I am quite sure the investments will be huge and if we don't do anything right now to improve the levels - the standards of plumbing systems that are planned, designed, are built, operated, I think we might have several health problems in the future by failing systems. It is crucial we act right now in order that sound plumbing systems are implemented and existing one's improved. There is a lot of for improvement in existing systems.