

The Role of Dental Amalgam from an Environmental Perspective.

Dr Rubina Mumtaz

BDS, MPH (Harvard)

Assistant Professor of Community Dentistry,
Islamic International Dental College
Islamabad

Dentistry and Mercury

- ☐ Within the healthcare arena, dentistry is one of the largest end-user of Mercury.
- ☐ One of the most common filling materials used is Dental Amalgam (silver filling).
- ☐ Dental amalgam filling is made up of mixture of Silver, Copper and Tin, all in powder form which is mixed with liquid mercury (process of mixing is called **amalgamation**)
- ☐ Dental amalgam is then plugged into the tooth cavity and any excess is spitted out.

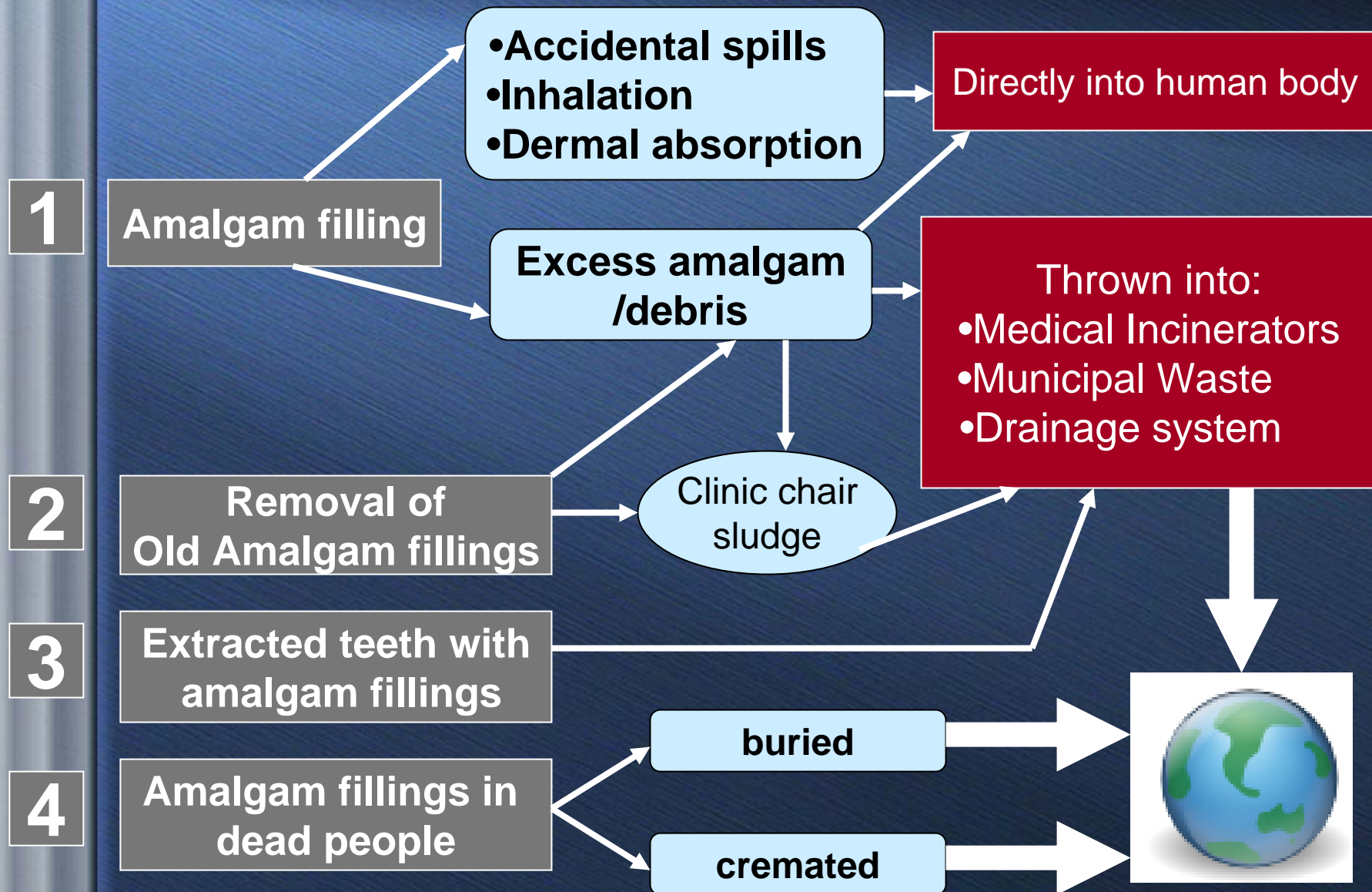
There are two modes of amalgamation:

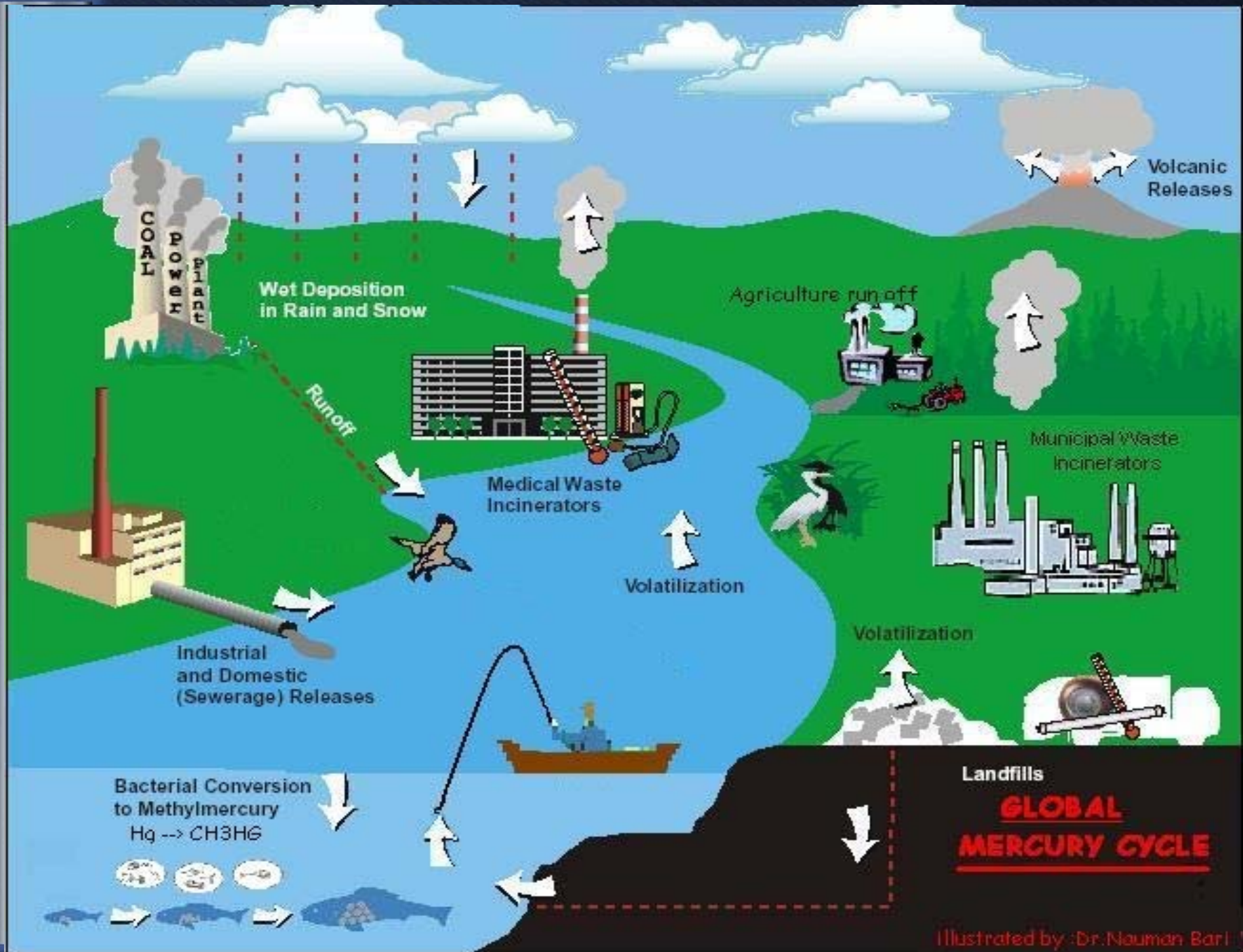
- ☐ **Mechanized:** Capsules containing a precise ratio of powder and mercury are mixed in a vibratory machine. This is the recommended method but carries an inherent cost factor.
- ☐ **Manual:** Powder and liquid Hg are mixed in a pestle and mortar. Usually Hg is in excess and has to be squeezed out before placing into the tooth. Most commonly used method because it is cheap and easy.

Film on amalgamation



Points of Hg contamination from a dental office





Amalgam controversy

Question: Knowing the hazards of mercury, why are amalgam fillings still used?

The dental profession has been embroiled in the infamous 'Amalgam controversy' for the past two decades – “**to use or not to use**”

Two key questions:

- ☐ Does amalgam fillings contribute to mercury toxicity in the patient?
- ☐ How does amalgam use contribute to the global cycle of mercury?

Research evidence

- ☐ After 20 years of research, **NO** solid evidence has pointed to Hg toxicity due to **ONLY** amalgam fillings in the mouth
- ☐ However majority of the studies have shown that occupational exposure to amalgam is a leading cause of Hg toxicity in the dental professionals

The global situation today?

- ▣ Scandinavian countries like Sweden, Norway and Denmark have implemented policies to phase out use of amalgam
- ▣ But the WHO, ADA, the US Public Health Commission and CDC have allowed the use of amalgam but only with strict implementation of amalgam waste management protocols
- ▣ The waste management is based on the principle of mercury recycling

Situation in Pakistan?

So far, only one research study conducted to evaluate amalgam use and its waste management by the Pakistani Dental professionals.

Results:

- ☐ 92.5% dentists use amalgam often/always
- ☐ This choice is dictated mainly by patient's financial constrain (87.9%)
- ☐ 91.6% dentists perceive amalgam a health risk but only 46.4% consider it an environmental hazard
- ☐ 98.7% dentists throw amalgam waste into the sink, municipal rubbish and hospital waste incinerators

Suggestions

- ▣ Phasing out of amalgam is not recommended
- ▣ Since amalgam waste management requires mercury recycling, this aspect requires government involvement and supervision
- ▣ Pakistan Dental Association should be involved in creating awareness amongst dentists on amalgam waste management protocols