In this issue

Watering Down Rules
Gaps in policy implementation

Many food products, including packaged drinking water, carry an ISI mark. The symbol represents that the product entering the market adheres to a specific standard laid down by the Indian government. One of the first agencies to be installed for this purpose was the Bureau of Indian Standards (BIS) which continues to function today.

However, the operations are not as smooth as they should be. There appears to be a void between policy making and its implementation. And that undermines the whole purpose of this exercise of policy making. What should be done to fill the gap between policy and implementation?

A General Article in this issue brings together the information on the process of certifying packaged water and the viewpoints of the stakeholders: scientists who help draft the policies, officials that implement the policies and businessmen in this enterprise. By examining how people perceive these standards, the author identifies three key problems with the current certification measures.

First, there are different institutions for different quality assessments with poor coordination among them. The BIS is involved in creating standards and certification agencies are not interested in taking action when policies are flouted. And finally, there is a lack of manpower and funds to ensure stringent adherence to established guidelines

Turn to **page 29** for insights on the hurdles faced by the BIS with respect to packaged drinking water.

Heavy Metal Menace
E-waste pollution

Tonnes of desktops, laptops, mobile phones and television sets are discarded every year. Retrieving functional parts such as motherboards, batteries and circuits from this discarded electronic equipment is an attractive economic option for many. The remaining electronic waste often contains minute quantities of precious metals. Many poor people find employment in companies extracting copper by burning printed wire boards. Though there are guidelines for environmentally sound management and handling of e-waste, as such operations are unregulated, the waste is disposed of unceremoniously, leading to pollution due to heavy metals such as cadmium, lead and mercury.

One such site is the Krishna Vihar industrial area in Delhi. Large dumps of waste electronic products lie on the roadside. Dismantling of e-waste and extraction of precious metals is an unorganized, unauthorized micro enterprise here.

On **page 166** read a Research Article by researchers from Jamia Millia Islamia, New Delhi, who investigated the soil and water samples from the area near the e-waste dumps. They report alarmingly high levels of these metals in all groundwater samples as well as both topsoil and subsoil samples collected from this area.

As both topsoil and subsoil sustain plant life, these heavy metals could enter the human food chain. Another route of entry is through water contaminated with the leachate. This raises concern as consumption of heavy metals is associated with toxicity, brain abnormalities and degenerative diseases. The scientists say that monitoring the health of crop plants in the area need to be taken up to give us additional clues about heavy metal toxicity.

Shifting the Focus of Remote Sensing
Oil deposits and tectonic activity

The Kutch basin in Gujarat is strategic from two standpoints. It sits on top of an area prone to intense tectonic activity on the one hand, and has rich hydrocarbon deposits on the other. Complex folding and rifts have happened there since the late Cretaceous. As some of these may increase the chances of an earthquake, it is imperative to monitor the geology of the area.

In this issue, scientists from the ISRO and the Indian Institute of Space Science and Technology, Thiruvananthapuram discuss remote sensing applications for inspecting subsurface geological structures. By unscrambling the aeromagnetic data collected from aircraft and information gathered from remote sensing satellites, scientists could identify several magnetic zones, faults, lineaments and domal structures in the Kutch basin.

The features of the basin can help identify pockets rich in hydrocarbon deposits while master faults can reveal spaces that are more likely to experience earthquakes. The Research Article on **page 174** examines the changing geology of the Kutch basin and its implications.

Release, Regain, Repeat
Reusing launch vehicles

Sending anything to outer space requires specialized rockets that can clear the earth's gravity. But once the payload is released into space, these machines lose their function. They either crash land on earth or keep drifting around, 2000 km above the earth. By devising a way to reuse launch vehicles, space agencies can reduce their mission costs several fold. But designing such technology is extremely complex.

To be able to reuse a rocket, we need to bring it back safely to earth at a predetermined location. This requires calculations of several air data parameters and integration of the results with flight guidance systems.

In May 2016, India successfully launched its Reusable Launch Vehicle Technology Demonstrator (RLV-TD). Shortly after the launch, the RLV-TD headed back to the earth and landed at a defined spot in the Bay of Bengal. The secrets behind the success of the RLV-TD's performance in its maiden launch are now shared by scientists who collaborated with each other to develop the critical technology.

In this issue of *Current Science*, we present twelve papers that deal with the technology involved in developing the RLV-TD. The Special Section throws light on the structure of the vehicle, aerodynamics control and guidance, integrated electro-hydraulic systems and other relevant aspects used in the RLV-TD.

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