

Response to the NCCS case

The Society for Scientific Values (SSV) and its self-serving cohorts have been trying to prove the allegations of misconduct by analysing the published figures over and over again. Even in SSV's and other's analysis no single image is an exact duplicate of another. I sincerely implore those interested in the case to take the pains to understand the scientific details of the papers and look at the allegations in the context of the results and conclusions of the papers. The original data and blots have been produced and analysed by the Padmanaban committee and the correspondence by Padmanaban¹ even contained two such original blots.

We have also presented extensive computer analysis of all figures to the committee and showed that no images were duplicated.

The *Science*² article clearly pointed out that the withdrawal of the paper by *JBC* was based on only two control blots. *JBC* was well aware of all the allegations concerning several other blots that SSV and others have claimed to have analysed. *JBC* never questioned the scientific results of the paper and we received excellent feedback before the paper was sent for final publication. The papers continue to be cited in well-respected journals.

I hope people, especially the self-styled image and computer specialists, understand the serious repercussions of making baseless and casual allegations.

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1. Padmanaban, G., *Curr. Sci.*, 2007, **92**, 1471–1473.
 2. Newsmakers, *Science*, 2007, **315**, 1775.
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Impact of Indian journals on science

Raval¹ has pointed out reasons as to why Indian journals are neglected by international core scientists. I would like to add two other reasons that, in my opinion, are not of less importance.

First, nowadays a science journal must have a quick review management policy in order to be chosen by good scientists. Good researchers quite often produce results quickly and would like their papers to be reviewed and published rapidly, which will enable them to follow-up with more results based on those already published. Once having experienced a long delay with a paper in any journal, there is little chance that a researcher would choose the journal in future.

Second, if a journal is to gain the interest of an international audience, its

editorial board should consist of not only national scientists, but also international ones. The *Current Science* editorial board, for instance, comprises scientists affiliated only to Indian universities and institutes, which is, in my eyes, a drawback. Even though the members of the *Current Science* editorial board are reputed and recognized throughout the world, it is simply not enough because it seems as though the journal wishes to cater to those interested in Indian science only, in turn narrowing its audience.

With rapid development in science and technology, more and more scientists are trying to contribute to this development. They are evaluated based on what they have achieved – mainly by publishing in good, well-known, highly cited journals.

New outlets are being established and they, as well as those that are already known and recognized, must strive for success. Nowadays success in science is usually associated with international publishing, whether it is from a scientist's or a journal's point of view. This concerns Indian journals as well as journals published elsewhere.

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1. Raval, U., *Curr. Sci.*, 2007, **92**, 1661.
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Offshore sand: An alternative?

Sand is an essential material for construction purpose, and there is no alternative to it till date. The demand for construction-grade sand in our country is increasing day by day due to the boom in construction fuelled by economic prosperity. Such a huge demand is pushing people to dig into the deeper bosoms of the traditional sources of sand, like riverbeds, lagoons, beach dunes, etc. exerting severe stress

on these sources. Unmindful and indiscriminate sand mining not only depletes these natural resources, but also creates environmental problems.

The environmental impact of unscientific and unscrupulous exploitation of these precious natural resources is well documented in the scientific literature. The impact of such exploitation is of late being felt by the people who are living in

the vicinity of the mining areas. The administration and civil society seem to be callous in their approach to such issues and remain contented by satiating their wants without thinking about the planet earth, which they owe to the next generation.

Consequences of riverbed sand mining include depletion of groundwater, saline intrusion, destruction of agricultural land,

loss of employment to farm workers, threats to livelihood, destruction of ecosystems and even human rights violation.

Uncontrolled sand mining from the riverbed leads to the destruction of the entire river system. Sand acts like a sponge, which helps in recharging the water table. Once this layer is removed, the hydrodynamics of the river gets disturbed and affects the velocity of water flow. This also enhances the penetration of sunlight deep into the soil, which aggravates the groundwater evaporation. Excessive instream sand and gravel mining lower the river bottom, which distorts the flow regime leading to the river bank erosion. As the trucks race to the middle of the river to collect sand, a bit of the riverbed dies every day. Such destruction destroys the entire habitat in the area. Depletion of the sand in the stream bed and along the coastal areas causes deepening of rivers and estuaries and enlargement of river mouth and coastal inlets. The direct consequences of this is the easy intrusion of saline, water especially during high tides. Once the saline water intrudes into the stream, it destroys the ecosystem. Widening of the river mouths and tidal inlets may expose the entire area to become vulnerable to storm surges and cyclones.

The booming construction industry however requires sand, as there is no alternative to substitute it. The time has

come to explore an alternate to this traditional source, and offshore sand gives a ray of hope. Whenever there is a mention about offshore sand, people have a misconception that it refers to the beach and near beach sand. No doubt, these areas are ecologically highly sensitive and any disturbance to it will have serious implications on the beach and its processes.

Sand occurring beyond 25 m water depth and beyond the territorial waters seems to be the answer to the imperatives. The Marine Wing of the Geological Survey of India has already established the reserves of several million tonnes of construction-grade sand in the offshore of Kerala coast (*Marine Wing Newsl.*, Geological Survey of India, vol. xx, No. 1 & 2, March–September 2006). Such a huge resource, if exploited commercially without destroying the environment, will be a viable substitute for the over-exploited traditional sources of sand. Offshore sand mining will have minimum effect on the physical environment of the sea as it does not affect the wave dynamics and beach profile. Mining them will have minimum impact on the beach process because there is no cross transportation either from the beach to these deposits or vice versa. Also the said resource is beyond 30 km from the shoreline. These sand bodies are remnants of submerged strand line deposits left behind when the

sea moved landward during the last transgression. Similarly, the shelf break in the west coast is wider compared to that in the east coast and the gradient of the shelf is roughly 1 m × 500–1000 m. This offshore sand as we understand, is naked sand without any overburden and its extraction will not require any removal of the overburden which may again agitate the sea bottom. The main attraction of these sand bodies is that they comprise all the grades of sand, both for construction as well as for the glass industry.

Although the impact of offshore sand mining on the physical environment of the sea will be minimal, its impact on the biological environment has to be studied in detail before taking any decision. Since sand mining at these depths has not been carried out before, provision must be made to enable scientific monitoring and gathering of information. Specific impact assessment should be done for each area. Understanding the impact of any aggression on the planet earth is essential for sustainable development.

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Evaluation of present pollution control regime in India

Share of agriculture in Gross Domestic Product is declining over the last couple of decades, and presently it is 22%. On the other hand, contribution from other sectors, i.e. industry and service is rising and it has an implication on conservation and protection of natural resources. With all its developments in various fields of knowledge, India still has 65% of its population depending directly on the primary economic sector. Keeping these facts in mind, resource conservation and protection is vital both for economy and ecology of the country. A brief examination of the present state of affairs is presented in the following.

Absolute control of pollution of any industrial activity, i.e. zero pollution is neither technologically possible nor economically viable. Further, nature has a

capacity to treat pollutants to some extent and threshold values differ amongst various ecosystems. Hence, the best option is to bring down pollution in emissions/effluents to a level where nature can treat them without any negative impacts. These safe levels of pollution load in India are developed by the Central Pollution Control Board (CPCB) and implemented by the respective State Pollution Control Boards (SPCBs). These boards were established originally to implement the Water (Prevention and Control of Pollution) Act of 1972 and later on were entrusted with the implementation of a plethora of legislations like the Air Act of 1984 and the Environmental Protection Act of 1986. In case of violation by industries, SPCBs are given powers to prosecute them or even direct them to close their operations

depending on the nature of damage. SPCBs are also responsible to develop better control technologies and also create awareness among the community. To augment their resources, SPCBs can collect revenues from industries in the form of Consent Fee.

Any chain is as weak as its weakest link. In the entire gamut of resource protection, the weakest link in India is the legalized standards with respect to pollution control as described below.

Standards are developed by considering mostly practised technology. Therefore, standards neither care for technological advancements nor the ability of receiving body to withstand the pollution load. For instance, the same standards applied for a power plant located on the coast and the river side are meaningless.