

[The role of science and technology in our country has grown by leaps and bounds in recent decades, as judged by any reasonable index. The size of our scientific manpower, the number of scientific institutions and laboratories and the governmental budgets for science-related activities have all expanded vastly. Along with this, the impact of science on our society, its economy, its industries and the life of its average citizen have also grown.]

This mushrooming importance of science brings with it a matching responsibility on the scientific community — to educate itself and the larger public through thoughtful and constructive analyses of different facets of our S & T endeavour, its impact, its priorities, its successes and its shortcomings.

Current Science would like to contribute to this process by publishing articles from time to time on such matters as the impact of science on our society, our scientific and technological priorities, the quality of our science, the health and functioning of our scientific community, science education at different levels, and so on. In doing this, we are not so much setting a new policy, as reviving an earlier tradition. Veteran readers of Current Science will recall that, over the many years when Prof. C. V. Raman was associated with Current Science, this journal used to publish articles and editorials on matters of science policy.

Contributions are invited from scientists on any aspect of any of the issues broadly described above. Comments from readers on these articles are also welcome. Publication of all such contributions is, as usual, subject to editorial judgement. Ed.]

BHOPAL AND VOLUNTARY ACTION

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THREE and a half years have elapsed since the worst industrial disaster in the world occurred in Bhopal. Some small changes have indeed entered the statute books in response to what happened, but there is little evidence either of any stricter monitoring of emissions and effluents from industrial establishments or of any action against the countless factories manufacturing hazardous chemicals throughout the land that continue to flout the existing lax regulations in regard to air and water pollution. Nor is there any discernible impact of the disaster on the current paradigm of development. The question we must ask ourselves is, what if anything, have we learnt from Bhopal?

The government has slowly wound up all scientific investigations, their findings often as inaccessible today as when they were begun. Except for a few diehards, even the activists have given up the unequal struggle — exhausted both by their internecine quarrels and the constant harassment by the government. The government's response to Bhopal has been

pathetic, but one is also a little disappointed with the voluntary effort in Bhopal. To take the most recent example, when the great jan vigyan jatha after snaking its way through the country with massive government funding, ostensibly to awaken the masses to the virtues of rational scientific thought, gathered in Bhopal for its final hurrah — after all but ignoring the tragedy throughout its long trek, it satisfied itself with a ritual oath taking ceremony, swearing that there would be no more Bhopals. (Is one allowed to ask what will prevent such recurrence?) There were no exhibitions on Bhopal, no street plays, no attempts to analyse what went wrong, to discuss who were responsible, no attempt to awaken the people to the dangers highlighted by the tragedy.

This is not to say that the voluntary effort in Bhopal was a failure. It is not that they did so little, but rather that they could have done so much more. In fact if any group comes out of this episode with some degree of honour to its

credit, it is the voluntary organizations. They struggled against unequal odds and for a long time kept Bhopal alive in the conscience of the nation.

In fact, the one clear message to emerge from Bhopal is that if there is ever going to be anything like the right to information in this country, if ever the concern for the environment is to grow and concrete action undertaken to protect it from the ravages of our present policies of development, then these can arise only from the concerted action of voluntary groups. Bhopal caught them unawares. It happened too suddenly and their response was piece-meal and fragmented. They were constantly reacting to the changing situation trying to build structures at the same time as they tried to undertake specific programmes of action.

Clearly the tasks were too diverse and the numbers involved too many for the volunteers to have done all that was required. There were no established networks which could be activated in response to the tragedy. There was often a lack of understanding between the various groups, often too much rivalry. Instead of a sharing of responsibilities there was often too much competition. Despite this, some excellent reports on the scientific, technical and medical aspects of the tragedy were prepared by voluntary groups, but by and large there was no preparation for long-term concerted action. One of the most serious failures was the unsuccessful attempt to organize chemical tests of samples of vegetation, air and water collected immediately after the disaster. Here the responsibility must lie squarely with the scientists in the universities. They were the only ones who could have carried out such tests given that all government laboratories were out of bounds for such unofficial investigations. Many scientists were approached but in the prevailing atmosphere of fear of imagined government sanctions and official displeasure, those that had the facilities to carry out such tests either developed cold feet or were unwilling to change their research programmes to accommodate these investigations. On the

other hand those that were willing to undertake such tests didn't have access to the facilities that would be required. In the end, apart from a few studies whose findings also turned out to be of dubious worth, practically all the samples that had been so enthusiastically collected by volunteers had to be thrown away and a great opportunity for generating alternate and independent information on the scientific aspects of the tragedy went waste.

Given the present political situation, we are heading towards an increasingly closed style of governance in which no information will be made public if its disclosure is considered even remotely embarrassing to the bureaucrats or politicians in power. That this is not mere speculation is clear from the fact that some members of the committee of experts appointed by the Supreme Court to make recommendations regarding medical relief of the Bhopal victims have found it necessary to draw the attention of the Supreme Court to the absurd situation in which the Gandhi Medical College, the ICMR, CSIR and ICAR continue to withhold medical findings on the Bhopal victims even from members of the committee.

All this clearly points to the need that there must exist autonomous institutions, outside government control, capable of gathering, generating and disseminating information. The intention would not be to duplicate all the facilities that the government has at its control — that is clearly impractical, but rather to set up an institution capable of generating enough information to provoke the government into releasing its own findings if for no other reason than to present its own counter view.

One of the more encouraging developments to have occurred in the aftermath of Bhopal has been the attempt to set up what has been called a People's Science Institute. The draft proposal for this institute starts with the plea that "we need a centre, an institute, where we can develop the concepts and practicalities of a science and technology that will serve the needs of the people ... because the present development process causes widespread environmental degradation whose victims, when they

seek to question the wisdom of those that control this process, find that there are hardly any independent research institutions which they can turn to which could be trusted to return unbiased and objective findings. Voluntary groups have no access to any of the sophisticated and expensive equipment that would be required to support their contentions with hard data". The proposed institute would be an independent institution with its own laboratory and library facilities equipped for doing good, solid research.

Experience with other voluntary organizations would seem to indicate that in order to attract and keep qualified workers, the salary structure in the institute must at least be at the same level as obtains in government institutions with similar functions. Dedication is an important prerequisite but dedication by itself does not ensure long-term commitment if salaries are kept at subsistence level — as is so often the case with voluntary organizations either on account of idealism in policy or because of a genuine shortage of funds. The key element in the successful functioning of such an institute, to ensure both good qualified workers and also proper facilities for work, is therefore going to be the availability of adequate funds. And herein lies the rub. The scale of financing required makes it difficult for the proposed institute to be funded by individual contributions. Funds from foreign agencies are ruled out on account of the inevitability of the institute being accused of being a front organization, particularly as it would often find itself in an adversarial position vis-a-vis the government. The recent changes in the income tax laws with regard to relief for donations would make it more difficult to raise the required funds from local industrial houses, even presuming that they would not be averse to supporting an institute whose major function would be to expose the wrong doings of their brothers in industry. Thus almost the only source of funds left is the government itself. While it is not unknown for the government to provide funds for setting up such autonomous institutes, however if government funding is accepted it will raise its own set of problems.

The government realises the great potential of voluntary action. That is why it has in recent years assiduously wooed voluntary organizations — through greater funding of their programmes, through acknowledgement that they have a useful role to play in areas where it is willing to admit it has failed, through giving them an ostensible hearing in official fora even if eventually scant attention is paid to their recommendations. However it would like to keep tabs on their activities and the easiest way of doing this is of course to fund them, preferably generously, because it knows that he who pays the piper must eventually call the tune.

The ideal solution therefore would be to raise funds through individual donations (difficult though this may be) supplemented by some substantial contributions from those persons that are actually going to be working at the institute. This is because if such an institute is to be successful, not only must it maintain extensive contacts at the grass roots level with the people who are likely to benefit from its investigations, but in addition, the persons who are going to be working at the institute must have a stake in the success of the institute. However, this may prove very difficult and time consuming for those who are interested in getting the institute started. Therefore a less than ideal, but perhaps more practical solution may be to accept the initial funds from the government with the clear intention of building up a corpus from private donations and individual contributions, through consultancy fees for work undertaken and funds generated through the sale of publications reporting its findings — the ultimate aim being complete financial independence. The risk here is that having chosen the softer option to start with, the extra effort required to achieve autonomy will never materialize. If this were indeed to happen, it would indicate that the institute had not succeeded in developing a network of people who considered the work of the institute important enough for them to support it through their own funds.

Equally important as autonomy is the question of the positions that the institute will take on matters of people's science. If the institute

really wishes to develop as large a network of supporters as possible, it will have to avoid adopting openly ideological stances. Here again an example from the jan vigyan jatha comes to mind. If one saw the exhibition on the dangers of nuclear energy that the jatha took around, one could easily come away with the impression that the Soviet Union or China had never exploded a nuclear device, that the last major nuclear accident occurred in Three Mile Island, that Chernobyl was a figment of the western imagination, that Pokhran had never taken place and that no one need be concerned about the proposed nuclear power station at Narora being sited close to a seismic fault. Such blinkered vision may of course have won the jatha a number of friends but it also helped to irritate and even antagonize a number of potential supporters. The proposed institute, I think, will have to be a little more even handed in dealing with problems affecting people's science.

One other issue which needs to be worked out is how much should the institute undertake, how wide should be its mandate? Clearly this will depend upon the interests and capabilities of the people who start the institute and the challenges that they choose to respond to. However some parameters need to be defined from the beginning, because, if the institute functions successfully, the demands on its services will grow, the pressure to expand its activities will mount and before you know it the organization's reach will have exceeded its

grasp. Thus the institute must consciously define its reach from the beginning, and also consciously encourage the development of a network of similar institutes throughout the country so that together they are able to shoulder the responsibilities of science for the people. A built-in mechanism for multiplication must form the initial blueprint for the institute.

The struggle against the dangers arising from development must be undertaken by the people exposed to these dangers if it is to be undertaken at all, and an institute like the one proposed is a crucial element in empowering the people in this battle against industrialists and an often indifferent government. I see in fact a network of such institutes spread all over the country, as being essential for giving substance to the conception behind the slogan — science for the people. The right to know and freedom of information will also acquire substance in the context of people's science only if such a network ensures that scientific information on any matter of public interest, no longer remains the property of the government and its research agencies. The breaking of this official monopoly on information is essential if any meaningful public debate is ever to begin on formulation of official policy and the effect that the implementation of such policies has on public lives. I see therefore a vital, dynamic and pioneering role for such an institute in our struggle towards a more humane, a less oppressive and a more open society.

NEWS

POLISH ACADEMY OF SCIENCES

Prof. C. N. R. Rao, Director, Indian Institute of Science, Bangalore, and Chairman of the Council of Scientific Advisors to the Prime Minister, has been

nominated as a member of the Polish Academy of Sciences. Prof. Rao, is the first Indian to be nominated to this Academy.
