Acid rain: an imagination of disaster versus scientific reality

By Professor Ghazally Ismail, Deputy Vice Chancellor of UNIMAS and Professor of Immunology

A series of critical environmental problems have surfaced in Sarawak in just these last few months. First, it was the ragingly fatal epidemic of Coxsackie virus killing about two dozens young children to about two dozens innocents. Secondly, we had to remind us of the unhygienic environment some of us have been exposed to. Then came the worst ever air pollution experienced in the state when the API hit more than 800 resulting in the haze emergency being declared. As if these were not enough, news of our water supply being contaminated sent thousands of Sarawak urbanites scurrying to the supermarkets to snatch the last of mineral water off the shelves. Alas! Here is an other one! Now there is an environmental catastrophe that has in the last few days so captured the Sarawak public’s imagination – acid rain. Drenched so much fear – the environmental crisis versus scientific reality?

As power plants and industrial plants burn coal or oil, they emit large amounts of sulphur dioxide, suspended particulate matter and nitrogen oxides. As these gases are transported long distances by winds, they form secondary pollutants such as nitric acid vapour and droplets containing solutions of sulphuric acid which eventually descend to Earth’s surface in wet form as acid rain. Other contributions to acid rain come from emissions of nitric oxide from large numbers of automobiles in large urban areas. Natural rain varies in acidity, with an average pH of 5.0 to 5.6. Acid rain, especially when the pH falls below 5.1, has been blamed for a number of harmful effects. In the 1970s, environmentalists in the United States claimed that acid rain had caused thousands of lakes to be devoid of life, with thousands more doomed to become fishless. No evidence was cited to support this position. In 1981, the National Research Council USA forecast that the number of acidified lakes would double by 1990. This has not happened.

In 1972, acid rain was regarded as a scourge, an unpleasant and destructive byproduct of industrialization. As electric power plants and industrial plants burn coal or oil, they emit large amounts of sulphur dioxide, suspended particulate matter and nitrogen oxides. As these gases are transported long distances by winds, they form secondary pollutants such as nitric acid vapour and droplets containing solutions of sulphuric acid which eventually descend to Earth’s surface in wet form as acid rain. Other contributions to acid rain come from emissions of nitric oxide from large numbers of automobiles in large urban areas. Natural rain varies in acidity, with an average pH of 5.0 to 5.6. Acid rain, especially when the pH falls below 5.1, has been blamed for a number of harmful effects. In the 1970s, environmentalists in the United States claimed that acid rain had caused thousands of lakes to be devoid of life, with thousands more doomed to become fishless. No evidence was cited to support this position. In 1981, the National Research Council USA forecast that the number of acidified lakes would double by 1990. This has not happened.

In Asia, acid rain was one of the most serious environmental problems. By 1980, the US Congress responded to this hype by authorising a 10-year US$500 million study, which became known as the National Acid Precipitation Assessment Project (NAPAP). Its purpose was to determine once and for all the effect of acid rain on the natural environment. Utilising the talents of nearly 700 of the nation’s top scientists in aquatic, atmospheric, and related sciences and ultimately costing US$537 million, the 25-volume report was completed by 1990. The report, issued after 10 years of study, concluded that acid rain should be viewed as a long-term problem, requiring pollution controls, but is not

The same result was found in Sweden where the principal effect of acid rain is the improvement of crop yields and crop protein content. NAPAP also found no evidence that acid rain had caused measurable human health problems. So, despite the acid rain, we are actually in far better shape than we have been led to believe.

I am fully aware that in taking this approach of presenting the uncertainties in science, I run the risk of being accused as “anti-environment.” That would be wrong. I merely believe that any contentious environmental problem should be proved to be real before we lavish money on them.

Good intentions are not enough in developing public policies; we need scientific facts. Good stewardship of the environment can only result from scientific honesty and straightforward analysis. At this point and time, I am reminded by the words of a very prominent naturalist and environmentalist in Harvard University, Dr Edward O. Wilson who once said: “Science remains our best hope for the future because it is such a potent force in marshalling effective action.” When scientific evidence is unassailable, political action is unavoidable.

SARAWAK TRIBUNE (6 OKTOBER 1997)