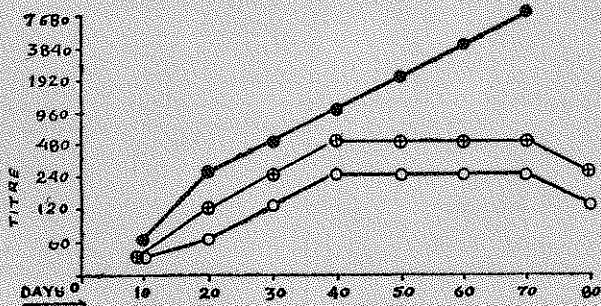


## LETTER TO THE EDITOR

### EFFECTS OF INHALED FUMES ON IMMUNOLOGICAL RESPONSE OF RABBITS

Sir,

It has been reported that air pollution due to fumes has reached serious proportions in some of our cities (1). The air in Calcutta has as much as 0.71 microgram of sulphur dioxide per cu meter against a maximum permissible limit of 0.1 microgram in the U.S.A. Air pollution is known to increase the incidence of all types of bronchial ailments. This may be due to local irritation and may also be due to adverse effects on immunological mechanisms. Smoking of *bidi* is also a common practice amongst poorer classes. Smoke from such a source can also act in a similar way, thus explaining predilection of smokers to respiratory ailments. A study was therefore undertaken to ascertain effects of inhalation of smoke on immunological mechanisms. Groups of rabbits were exposed intermittently to diesel fumes or *bidi* smoke. The immunological status was assessed by estimating antibody titres after injection of typhoid-paratyphoid vaccine. The vaccine contained 1000 million *S. Typhi* & 750 million *S. paratyphi* A&B per ml; 0.5 ml was given subcutaneously on day 0, and 1.0 ml on day 50. The diesel fume was generated by dipping an electric immersion heater in a mixture of diesel and mobil oil (100:6). The smoke from mixture or from burning *bidi*'s was sucked into a closed exposure chamber. The Suction was induced for 1 minute every 30 minutes which gave a fairly uniform concentration of smoke. Animals were exposed for 2 hours every day. The Widal test was performed by standard Cruikshank technique before start of exposure and then every 10th day till 80 days. The results are shown in figure.



Average immune titre (Widal) after TAB injection in groups of rabbits. Control; open circle; diesel fume exposed; close circles; *Bidi* fume exposed; crossed circles. Second injection of vaccine on day 50.

The quantum of antibody generated was less in animals exposed to smoke, though the rate of generation was similar as indicated by the slope of the curves. Stationary state occurred much earlier and the secondary response was absent in the exposed group.

The experiments are being extended to other species also. Experiments to assess immune status in subjects constantly exposed to smoke, and smokers are also in progress. The preliminary report is being submitted in view of the implications and health hazards imposed by diesel fume, specially in larger cities.

U. C. SAMAL, R. SARAN AND R.K. SANYAL\*

*Departments of Cardio-respiratory Physiology, Microbiology & Pharmacology,  
Rajendra Memorial Research Institute, Patna-7*

#### REFERENCE

1. Sanyal, R.K. Presidential Address, Aspects of Allergy and applied Immunology, **7** : 1-5, 1974.

---

\*Present address: Director, National Institute of Family Planning, L-17, Green Park, New Delhi-110016.