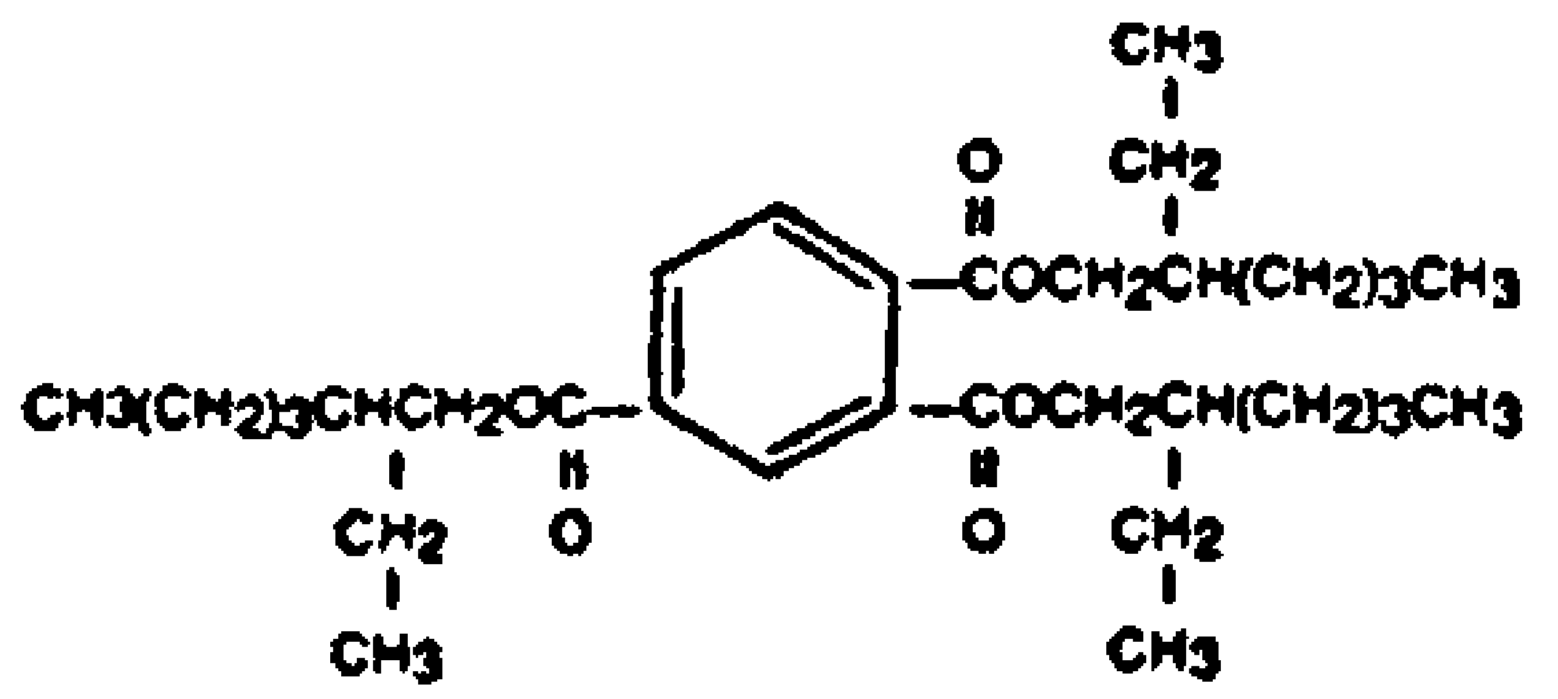
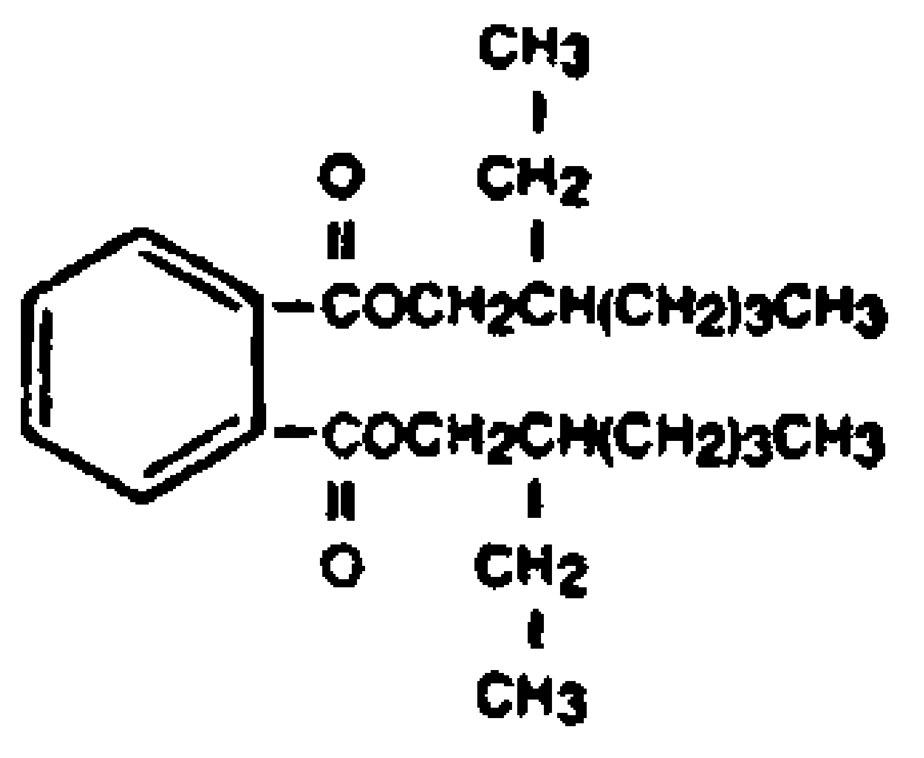


TRIS (2-ETHYLHEXYL) TRIMELLITATE
(HATCOL 200)



DI (2-ETHYLHEXYL) PHTHALATE
(DEHP)

Figure 1. Chemical structure of DEHP and HATCOL-200.

Twenty four hours after the last (5th day) injection, all these groups received 50 mg/kg of pentobarbital and their sleeping time was noted. The interval between the loss and regaining of righting reflex was recorded as the sleeping time; these were measured by laying the animals on their backs until they returned to their feet.

Statistical significance of the result was evaluated by Students' *t* test as described by Fisher[2].

A significant ($P<0.01$) reduction of pentobarbital-induced sleeping was observed (table 1) as a result of HATCOL-200 pretreatment for five days. This may be attributed to the quick elimination of pentobarbital in the presence of this new plasticizer. The present results do not agree with those of Lawrence *et al*[3] who demonstrated a dose-related increase in the pentobarbital sleeping time in albino mice treated under identical conditions with DEHP. Further an attempt was made to verify the enlargement of lipophilic pool by intraperitoneal injection of fixed vegetable oil (such as olive oil, cotton seed oil and others) which produced a non-specific effect (sleeping time change) after pentobarbital injection as claimed by Swinyard *et al*[4]. Our study using cotton seed oil did not support this hypothesis. The quick biotransformation/elimination kinetic of injected pentobarbital by other xenobiotics such as HATCOL-200 in *in vivo* condition may be due to the increased release of drug metabolizing enzymes or some other non-enzymatic process. The new plasticizer might act as a facilitating factor of hepatic microsomal enzymes that catalyse the oxidation of pentobarbital.

Table 1 *Effects of intraperitoneal administration of tris (2-ethyl hexyl) trimellitate HATCOL-200), cotton seed oil and normal saline on pentobarbital induced sleeping time*

Treatment	Sleeping time (min)	Significance
Control normal saline 5 ml/kg intraperitoneally IP	39.5 ± 8.27	—
Tris (2-ethyl hexyl) trimellitate 5 ml/kg IP	13.3 ± 5.72	$P<0.01$
Cotton seed oil 5 ml/kg IP	39.1 ± 6.36	—

Six mice were used in all treatments; All values are mean ± SE from six animals; Probability evaluated by Students' *t* test.

This note forms part of the Ph.D. thesis work of KR.

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A NOTE ON BISMUTH INCIDENCE IN NARDA HILL, NIM-KA-THANA TAHSIL, DISTRICT SIKAR, RAJASTHAN

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A small outcrop of lumpy bismuth ore was located in the pegmatites at Narda (27°45′N:75°56′E) in northeastern Rajasthan (figure 1). Initial optical

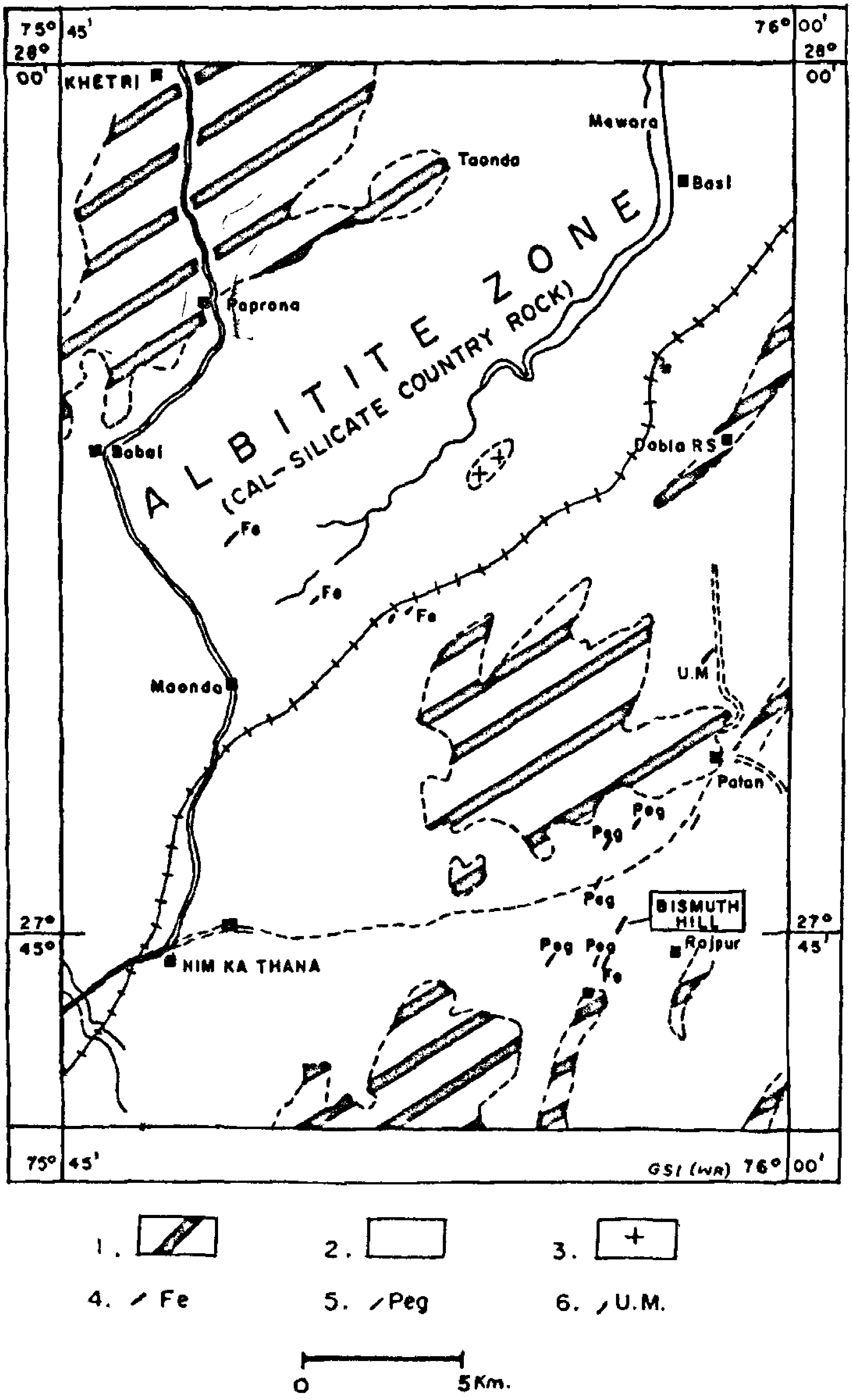

Figure 1. Regional geological map of Nim-ka-thana area showing location of bismuth ore and the pegmatite bodies. 1. Delhi quartzites; 2. Calcsilicates and its syn- to post-tectonic intrusive; 3. Granite; 4. Magnetite bodies; 5. Pegmatites, 6. Ultramafic and basic bodies.

Table 1 *Semi-quantitative determination of the lump ore by optical emission spectrograph and spectrophotometer*

Bi	Pb	Cu	Ag	As	Mo	Sr
20–30%	1%	0.5%	0.1%	2%	250 ppm	700 ppm

emission spectrograph and spectrophotometer scanning of the lump ore revealed a high elemental concentration of bismuth (table 1). The light creamish coloured lumpy ore with soft greenish clayey encrustation effervesces very strongly with cold HCl. The ore has a high specific gravity (7–8).

The X-ray diffraction pattern of the lump ore shows characteristic lines of bismutite $(BiO)_2CO_3$ and beyerite $CaBi_2O_2(CO_3)_2$. The strongest intensities in the pattern are of the 2.944 Å and 2.844 Å lines, which correspond to the two minerals. The XRD data are given in table 2.

The ore occurs as a lensoid segregation of dimensions 1.5 m × 1 m × 0.5 m within a weathered and crushed unzoned pegmatite body which is emplaced in the axial zone of an appressed reclined fold structure plunging westerly (15°–20°). The country rocks are predominantly calc-silicates with subordinate felsic tuffs belonging to the Delhi-Super group of Proterozoic age. Syn- to post-tectonic intrusives of pegmatites, basic dykes and albitites (albite-rich monomineralic rock)[1] are frequent in the calc-silicates.

Table 2 *X-ray diffraction data*

Intensity	d(Å) of lump ore	Bismutite*	Beyerite*
M	10.88	—	10.88 (90)
M	6.87	6.90 (7)	—
M	3.71	3.72 (7)	3.72 (30)
W	3.61	—	3.62 (20)
W	3.42	3.42 (6)	—
M	3.33	—	3.35 (80)
VS	2.944	2.95 (10)	—
S	2.844	—	2.85 (100)
S	2.726	2.73 (7)	2.72 (20)
W	2.66	—	2.67 (70)
VW	2.58	—	2.60 (30)
VVW	2.53	2.54 (4)	—
W	2.27	—	—
M	2.14	2.14 (10)	2.15 (70)
W	1.93	1.93 (7)	—
M	1.749	1.75 (8)	1.754 (50)
W	1.7155	1.71 (7)	—
W	1.683	1.68 (7)	1.689 (60)
M	1.616	1.62 (10)	—
W	1.572	—	1.578 (70)

*Values appearing in Chandy *et al*[2]; W, Weak; M, Medium; S, Strong; VS, Very strong; Numbers in parentheses are approximate intensity values on a scale of 1 to 10 for bismutite and 10 to 100 for beyerite.

In the course of preliminary scanning more pegmatites in the adjoining areas have indicated higher-than-normal lithophile abundance of bismuth (e.g. 700 ppm and more). Favourable areal and depth continuation of bismuth and allied mineralization may therefore be assumed in the area. But locating them by drilling will be difficult because of their lensoid and segregated nature.

The author thanks M. D. Sathe, Chemical Division, Geological Survey of India (WR), for the semi-quantitative determination of the lump ore and G. L. Diwedi, Mineral Physics Lab., GSI (WR), for XRD analysis.

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EFFECT OF CADMIUM–ZINC INTERACTION ON YIELD AND CADMIUM AND ZINC CONTENT OF MAIZE (*ZEA MAYS* L.)

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CADMIUM is a potentially harmful element for plants. It causes toxicity, reducing crop growth and yield. Zinc is an essential plant nutrient, but its application beyond a certain level to the soil may also prove toxic to growing plants. Due to their geochemical kinship, the presence in the environment of Cd is normally linked to the presence of Zn. Cadmium and Zn are taken up actively by plants at concentrations normally found in the soil[1,2]. Due to similarity of their electronic structures, Zn and Cd should compete for absorption sites on the root surface of plants. Several workers[3,4] have reported antagonistic effect of Zn on Cd uptake by radish and bush bean, although enhancement of Cd content of soybean by Zn was also noted[5]. Similarly Cd has been found to reduce the uptake of Zn by rice and berseem[6,7].

Since the nature of Cd–Zn interaction is expected to differ with the crop, an attempt was made to