DISCUSSION
The present study consisted of 445 cases of acute poisoning, admitted in the hospital from January 1990 to December, 1992. The overall incidence of acute poisoning was 6/1000/year of total hospital admissions. The overall incidence in relation to total emergency admissions was 16/1000/year whereas it was reported by Kumar et al (1989) as 21.5/1000. In emergency roughly every 13th case on medical side was of acute poisoning. Incidence of poisoning has been increasing year by year possibly because of increasing incidences of marital disharmony, broken engagements, harrassment by family members, various family problems, unemployment, loss of job, failure in examination, depression, prolonged illness and personality disorders.

TYPES OF POISONING

The intention was suicidal in 75.5% cases, accidental in 19.8% cases, stupefying in 3.5% and remaining 1.1% cases were homicidal. Almost similar type of results have been observed viz. suicidal (50-97%), accidental (3-26%), stupefying (0-71%) and homicidal (0-20%) by Siwatch et al (1988), Kumar et al (1989), Chug et al (1991), Mahapatra et al (1991) and Khosla et al (1992).

Accidental poisoning was most common (88%) in childhood, because they starts crawling and walking at the
age of 1 year and are very active and try to explore unfamiliar objects by putting into their mouth (oral phase of psychosexual development). Thus they exposed themselves to accidental poisoning. Other etiological factors may be large family, in which mother is often engaged with household works, carelessness in storage of the poisonous substances, due to little storage facilities in small houses, poisonous substances are stored in easily accessible places, hence children living in these small and over crowded houses are more exposed to accidental poisoning.

Stupefying poisoning occurred mostly for robbery purposes and rarely for kidneppin and rape.

RESIDENCE AND RELIGION

In present study, 68.1% cases of poisoning belonged to Uttar Pradesh and remaining 31.9% belonged to Madhya Pradesh. It is because this medical college is situated in the border of UP and MP both. A total 316 (71%) cases belonged to rural areas and remaining 129 (29%) belonged to urban areas. According to 1981 census, the percentage of rural and urban population was 73 and 27 respectively. Considering this, there is hardly any difference in the incidence of poisoning in urban and rural areas. Multani et al (1991) reported slightly higher incidence of poisoning in urban (34.5%) and 65.5%) in rural areas. Our findings are in conformity with the respect of Chug et al (1991), who reported the incidence
in rural area 85% and urban 15%.

Eighty five percent of total poisoning cases were Hindus. According to 1981 census, population of Hindus was 78.2%. Thus, incidence of poisoning is slightly higher in proportion to population of Hindus, but this difference is not likely to be statistically significant in overall.

There were 271 (54.2%) males and 204 (45.8%) females in the present study. The Male : Female ratio was 1 : 0.85. According to 1991 census male : female ratio was 1 : 0.93. Thus poisonings are almost same in males and females. Almost similar type of results i.e. 46.3 to 78.6% males and 21.4 to 53.7% females were observed by Kumar et al (1989), Samaria et al (1990), Multani et al (1991) and Mahapatra et al (1991).

Out of 445 cases, 185 (41.6%) cases belonged to age group of 15-24 years, 115 (25.9%) cases belonged to 25-34 years of age, and 46 (10.3%) cases belonged to 0-4 years of age group. In 1991 census 18.2% population belonged to 15-24 years of age group, 14% belonged to 25-34 years and 12.6% belonged to 0-4 years of age. Thus, poisoning was two times more common in age group of 15-24 and 25-34 years of age group and in children the poisoning was more common in age group of 0-4 years of age as compared to proportion of population of 1991 census. It was because of children in this age group try to explore
unfamiliar objects by putting into mouth. Previous studies showed that 73.3% cases belonged to 2nd decade (Multani et al, 1991) and 66.1% in 2nd and 3rd decade (Mohapatra et al, 1991).

SOCIO-ECONOMIC AND MARITAL STATUS

In the present study, 56.2% cases of acute poisoning belonged to joint (combined) family and 53% cases were married. 73.7% cases were from low socio-economic group. Kumar et al (1989) reported 56.36% cases from low socio-economic group. This higher incidence in present study was due to much more poverty stricken population in Bundelkhand region.

MONTHLY DISTRIBUTION

Majority of the cases of acute poisoning admitted in the month of June (57, 12.8%). Around 201 (45.2%) cases admitted between the months of April . .to July. This increase in incidence of poisoning during these months was because, most of the results (high school, intermediate, graduate and postgraduate) are declared during these months, and persons who do not succeed in examinations, some of them take poisons. During these months corn is also stored with aluminium phosphide tablets, EDB ampoule are put into stored corn to repel or kill the rodents and other insects.
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PATTERN OF POISONING

In the present study, aluminium phosphide was
commonest (91, 20.5%) poisoning followed by Dhatura (61, 15%), rodenticide (14.4%), organophosphorus compounds and
other remaining were miscellaneous group.

In 1990, aluminium phosphide poisoning was 12%
but progressively increased and reached to 27.3% in 1992.
It is commonest suicidal agent in northern India as
that aluminium phosphide in Haryana was unknown before
1980, but it increased progressively and surpassed other
poisonings in Haryana. Incidence of aluminium phosphide
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India. Recently patients of aluminium phosphide reported
from M.P., Bajaj et al (1988) from Delhi and Ram et al
phosphide poisoning was commonest because it is very
cheap and easily available in market and more effective.

Other major groups of poisoning were dhatura
(15%), rat killer (rodenticide) (14.4%), organophosphorus
compounds (61, 13.7%) and other poisonings were 35 (7.6%).
Dhatura poisoning was common in the use for stupefying to
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Most (66.7%) of the poisoning cases were
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Other major groups of poisoning were dhatura (19%), rat killer (rodenticide) (14.4%), organophosphorus compounds (61, 13.7%) and other poisonings were 35 (7.6%). Dhatura poisoning was common in the use for stupefying to robbery and kidnapping. This poisoning is used during journey.

Most (66.7%) of the poisoning cases were discharged within 3 days from admission. Almost similar
results were reported by Miltani et al (1991). They reported that 70% of patients were discharged within 48 hours. Cases of sedative and dhatura poisoning stayed in hospital slightly longer due to the poisoning nervous system is affected.

A total of 87 cases were analysed for psychiatric assessment in which 6(6.9%) cases were depressive and 2(2.3%) cases were schizophrenic (behavioural disorders). Self-poisoning is often an important feature of various psychiatric disorder and of depression in particular. (Alexander, 1986).

ALUMINIUM PHOSPHIDE POISONING

The incidence of aluminium phosphide poisoning increases year by year. It was the commonest (20.5%) poisoning in present study. Most of the patients presented in hospital with clinical feature of gastrointestinal upset (nausea, vomiting, burning pain etc). (96.7%), tachycardia - 73.6%, severe hypotension and very feeble and impalpable peripheral pulses - 71.4%, semidilated pupils - 54.9% and restlessness in 48.4% of cases. Almost similar type of clinical feature observed by Siwatch et al (1988), Chug et al (1991) and Khosla et al (1992).

The positive electrocardiographic changes occurred in 79.5% cases of aluminium phosphide poisoning. Previous authors showed that electrocardiographic changes occurred in 36 to 90.8% of acute aluminium phosphide cases.

On blood investigations enzymes aminotransferases (SGOT, SGPT) increased in 30.4% cases, serum bilirubin raised in 13% and blood urea and serum creatinine were raised in 9.7% cases. These increased value sdepended upon damage of heart, liver and kidney. According to Puraman et al (1989), 84% of aluminium phosphide cases have increased SGOT, SGPT and 44% cases had increased serum creatinine.

76.2% to 100% cases expired, who had taken three tablets or more. Mortality was lower (45-51.7%) in patients who had taken equal or less than 2 tablets. Mortality rate was higher (62%) in those patients who took fresh tablets than the patients who took exposed tablets (20.8%) because in exposed tablets phosphine gas liberated an exposure to atmospheric moisture. Almost similar type of results observed by Singh et al (1985), Dasohara et al (1985), Siwatch et al (1988) and Katira et al (1990).
Patients who had resistant hypotension (not responded to dopamine) associated with oliguria, development of coma, severe hypoxia and chest infection had poor prognosis. Almost same type of bad prognostic indices were showed by Chug et al (1990, 1992).

After giving proper supportive treatment and injection magnesium sulphate, 27(29.7%) cases survived, 56(61.5%) expired and remaining 8(8.8%) cases absconded. So mortality rate in aluminium phosphide poisoning was 61.5%. Previous authors reported mortality ranging from 37 to 100% (Singh et al, 1985; Chopra et al, 1986; Khosla et al, 1988; Ram et al, 1988; Agarwal et al, 1989; Singh et al, 1989 and Katira et al, 1990).

Ninety percent deaths of aluminium phosphide occurred in 1st 24 hours. Similar type of results (93%) were reported by Khosla et al (1992) in aluminium phosphide poisoning in 1st 24 hours.

The aluminium phosphide poisoning was common in agricultural belt. It is emerged as a dangerous weapon to human lives due to its easy availability in homes, easily availability from market and very cheap. Very high mortality in this poisoning is because it is very toxic and damaged to heart, liver, lungs and have no specific antidote.
RODENTICIDE (RAT KILLER) POISONING

It was the third commonest type of poisoning in present study. It comprised 64 (14.4%) cases. Most of rodenticide poisoning patients presented with clinical feature of gastrointestinal upsets, tachycardia, semi-dilated pupils, dyspnoea etc.

29.2% of rodenticide poisoning had positive electrocardiographic changes. They were St-T change (25%), atrial fibrillation, bradycardia, right bundle branch block. 22.2% of poisoning cases had raised values of SGOT, SGPT, 11.1% cases had increased value of serum bilirubin and blood urea and serum creatinine were raised in 7.1% cases.

Mortality rate was 6.2%. Almost same type of results were observed by Subramaniam (1990), in which mortality rate was 8.8%. Rodenticide poisons available in the market in the form of powder pouch, it contains ether barium carbonate, or zinc phosphide or warfarin etc. Mortality rate was lesser because of in market fake rodenticide are available. These are less toxic except zinc phosphide.

ORGANOPHOSPHORUS POISONING

A total of 61 (13.7%) cases of organophosphorus poisoning were analysed for various clinical parameters. The substance which were taken by the patients, were malathion, parathion, diazenon (Tick-20) and baygon (propoxor). Previously it was the commonest poisoning
all over India, but its place has been taken by aluminium phosphide poisoning. Previous studies showed that organophosphorus poisoning was 10.3 to 44.5% of total admitted cases of poisoning (Kumar et al, 1989; Mahapatra et al, 1990 and Multani et al, 1991). In present study it was still 4th commonest group of poisoning.

Most of cases of organophosphorus poisoning presented with clinical feature of gastrointestinal upsets (70.5%), respiratory distress (67.2%) and constricted pupils (57.4%). Other clinical features were restlessness, altered sensorium bradycardia, shock, oliguria, convulsions etc. Almost similar type of clinical features were observed by Vishwanathan et al (1962), Gupta et al (1968), Singh et al (1969), Natarajan (1977), Gupta et al. (1990) and Bitchile et al (1990).

The positive electrocardiographic changes were observed in 25.9% cases. Commonest electrocardiographic changes were bradycardia (18.5%), Supraventricular tachycardia (11.1%) cases. Almost similar type of results were observed by Gupta et al (1990) and Singh et al (1991). They reported 10-30% cases of organophosphorus poisoning have positive ECG changes. On blood investigation SGOT, SGPT raised in 29.3% cases and serum bilirubin raised in 9.1% cases.

19.7% cases of organophosphorus poisoning expired. Almost similar mortality rate (18.4 to 43.0%).
Organophosphorus poisoning was common because of it extensively used as pesticide in agriculture, some of these substances are in common domestic used for destruction of vermin or rodents. The public has no difficulty in obtaining them, when the impulse to commit suicide arises, they are ready at hand. Lack of awareness regarding to methods of spraying caused organophosphorus compound poisoning in large number of cases, which can be prevented by proper education with the help of mass media.

Dhatura Poisoning

It was second commonest group of poisoning in our study, it comprises 67 (15%) cases of dhatura poisoning. The clinical presentation were restlessness, drowsy and altered sensorium 85.1% cases, tachycardia in 76.1%, dilated pupils (62.7%) and gastrointestinal upsets in 55.2% cases. No positive electrocardiographic changes were observed except tachycardia. The mortality rate was 3%.

It was common poisoning because in rural area it is easily available, it is employed mainly as stupefying poison, mostly for purpose of robbery. Some people takes it as prasad of God Shivji and some people use it as an aphrodisiac. Accidental cases also occurred in children and adults, who eats raw fruits or seeds mostly from edible
fruits or capsicum seeds respectively. Accidental cases also occurred from the use of dhatura seeds by quacks for treatment of various ailments.

**IN MISCELLANEOUS GROUP**

All 4 cases of ethylene dibromide (EDB) expired with in 2 days of admission. In EDB poisoning patients presented with complaints of gastrointestinal upsets, after 4-6 hours of intake of drugs patients developed hypotension, tachycardia restlessness, oliguria, gastric bleeding, haemolysis, unconsciousness etc.

On investigation all 4 cases were positive electrocardiographic changes. They were atrial fibrillation. ST-T changes, ventricular ectopics and tachycardia. Blood urea, creatinine and serum enzyme levels SGOT, SGPT, CPKMB values raised in all 4 cases of poisoning whereas serum bilirubin raised only 3(75%) cases of EDB poisoning. Investigation results indicated that it is highly toxic substance and damaged to heart, liver and kidney etc.

Ethylene dibromide available in the market in the name of EDB ampoule, which contains 2 ml colourless fluid. It is used as a grain preservative.

**OUTCOME OF TREATMENT**

Even after giving proper treatment, 82(18.4%) cases were expired, in which mostly 56(68.3%) deaths were due to aluminium phosphide poisoning, and 12(14.6%) deaths due to organophosphorus poisoning cases.
Remaining 14(17.1%) deaths were due to rodenticide, alcohols, dhatura, EDB poisoning etc.

Almost similar type of results observed by Multani et al (1991) in which overall mortality in total poisoning cases was 25.5%. It was highest in aluminium phosphide poisoning 77.2% followed by mixed poisoning and organo-phosphorus poisoning.

PREVENTION OF POISONING

Accidental poisoning was common in children, it is prevented by:

1. Protection of child from poisonous substance, the poisonous substances should be kept secured places beyond the reach of the child.

2. Parents about the potential household poisons should be educated.

3. Need for parenteral supervision for toddler behaviour should be emphasized.

4. In proper technique of spraying of organophosphorus compounds (Insecticides) and proper way to put celphos tablets/EDB ampoules in stored grains with rubber gloves.

5. Stupefying poisoning prevented by never takes any substances such as biscuits, cigarettes, pans etc. from unknown persons or during journey.
6. Very toxic substances should be banned such as aluminium phosphide tablets.

7. All toxic substances (especially pesticides) should be provided with specific antidotes.

8. In the toxic substances regulation by state should be enforced.

9. Establishment of poison control centres to collect couple and disseminate information from poisons and their management.