

By continued exposure to the air, at ordinary temperatures, crystallized sodium phosphate is said to lose five out of its normal twelve molecules of water of crystallization. This would result in a salt containing 26.5 per cent of phosphoric acid. In all samples showing a higher percentage than 26.5, it is probable that these have been intentionally subjected to desiccation, or have been for a long time kept in an abnormally dry atmosphere.

The result of desiccation is to make the sodium phosphate content more than 100 per cent when calculated from the phosphoric acid found. The number thus obtained has however, a practical value; and should be known to the physician, if regard is to be had to the quantity prescribed. Thus, if a prescription calling for 100 parts of sodium phosphate is filled by a partially dried salt containing 26.5 per cent of phosphoric acid, the patient receives about one-third more of the drug than the physician directed. It will be seen, from the table, that a large number of these samples are so abnormal, that a given weight of them corresponds to much more than the same weight of sodium phosphate; in a few cases to nearly double that weight.

Sodium phosphate is prepared by the interaction of acid calcium phosphate with sodium carbonate. The acid calcium phosphate is itself prepared by treating a neutral calcium phosphate with sulphuric acid. It is well known that much of the sulphuric acid of commerce contains arsenic, derived from the raw material (pyrites) employed in its manufacture. In consequence of this fact, arsenic is frequently introduced into acid calcium phosphate, and thence into the sodium phosphate, prepared from it.

The occasional presence of notable amounts of arsenic in sodium phosphate was pointed out in 1909 (see bull. 181). Six samples of the drug were found to contain from 5 to 10 parts of arsenic per million.

The Pharmacopœia fixes the limit for arsenic at 5 parts per million, and this limit is legalized for Canada by Order in Council of October, 1912, (G. 1048). A recent report to the Local Government Board of Great Britain, by Dr. MacFadden, (1916-17) includes certain samples (about 50 in number) of acid calcium phosphate in which the arsenic was excessive, reaching as much as 400 parts per million. In one sample 643 parts per million were found. It is easily to be understood how arsenic, in considerable amount, may pass over into sodium phosphate manufactured from an acid calcium phosphate of such character.

Of 144 samples of sodium phosphate herein reported (Table I), 64 samples are found to contain no arsenic, or only negligible traces. Sixty-eight samples contain amounts not exceeding 5 parts per million, while 12 samples contain above 5 parts per million, the highest amount found being 25 parts.

Effervescent Sodium Phosphate (*Sodii Phosphas Effervescens*) is a mixture of sodium phosphate with sodium bi-carbonate and citric and tartaric acids. It is, in effect, a convenient mode of administering sodium phosphate; and contains about one-third of its weight of this salt. The usual dose is about double that for sodium phosphate.

One hundred and sixty-nine (169) samples of this article are reported in Table II. So far as arsenic is concerned, they show as follows:—

	Samples.
No arsenic or traces only.	74
Less than 5 parts per million.	94
More than 5 parts per million.	1

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It is evident, however, that these samples are chiefly made from sodium phosphate containing more or less arsenic, and the explanation of a better showing is the fact that only about one-third of the weight of the article consists of sodium phosphate.