CASE REPORT

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Methenamine—An Unusual Component in an Improvised Incendiary Device

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ABSTRACT: An improvised incendiary device intended to be concealed in a cigarette pack was recovered before its assembly was completed. The chemical components identified were concentrated sulfuric acid, sucrose, potassium chlorate, and methenamine. Methenamine will support combustion and was probably included as a fuel to keep the fire burning longer.

KEYWORDS: criminalistics, explosives, incendiary devices, methenamine

On 20 Jan. 1989, Base Security at the Anti-Submarine Training Base in San Diego, California, received a report that a student was building a chemical explosive device in his barracks room. A subsequent search and investigation by agents of the U.S. Naval Investigative Service recovered a package containing chemicals in unlabeled containers; various component parts for an improvised incendiary device that was intended to be concealed in a cigarette pack; and a small spiral notebook with hand-printed entries, including addresses of chemical supply firms, lists of chemicals, recipes for explosive/incendiary devices, and instructions for the assembly and placement of such devices.

The chemicals identified were concentrated sulfuric acid, sucrose, potassium chlorate, and methenamine. The first three ingredients are commonly encountered in explosive/incendiary devices, but a review of the literature, plus private inquires by the author, did not uncover any instances of a similar use of methenamine, although the *Encyclopedia of Explosives and Related Items* [*1*] says, "several hexamine/oxidant mixtures have been patented as explosive and propellant compositions," and the infrared spectrum for methenamine is included in the "Compilation of Infrared Spectra of Ingredients of Propellants and Explosives" [*2*].

Methenamine ($C_6H_12N_4$) [also commonly known as hexamine and hexamethylenetetramine (HMT)] was identified from its infrared spectrum (Fig. 1) [*3*]. According to *The Merck Index* [*4*], methenamine is used as a urinary antibacterial, but it also has other

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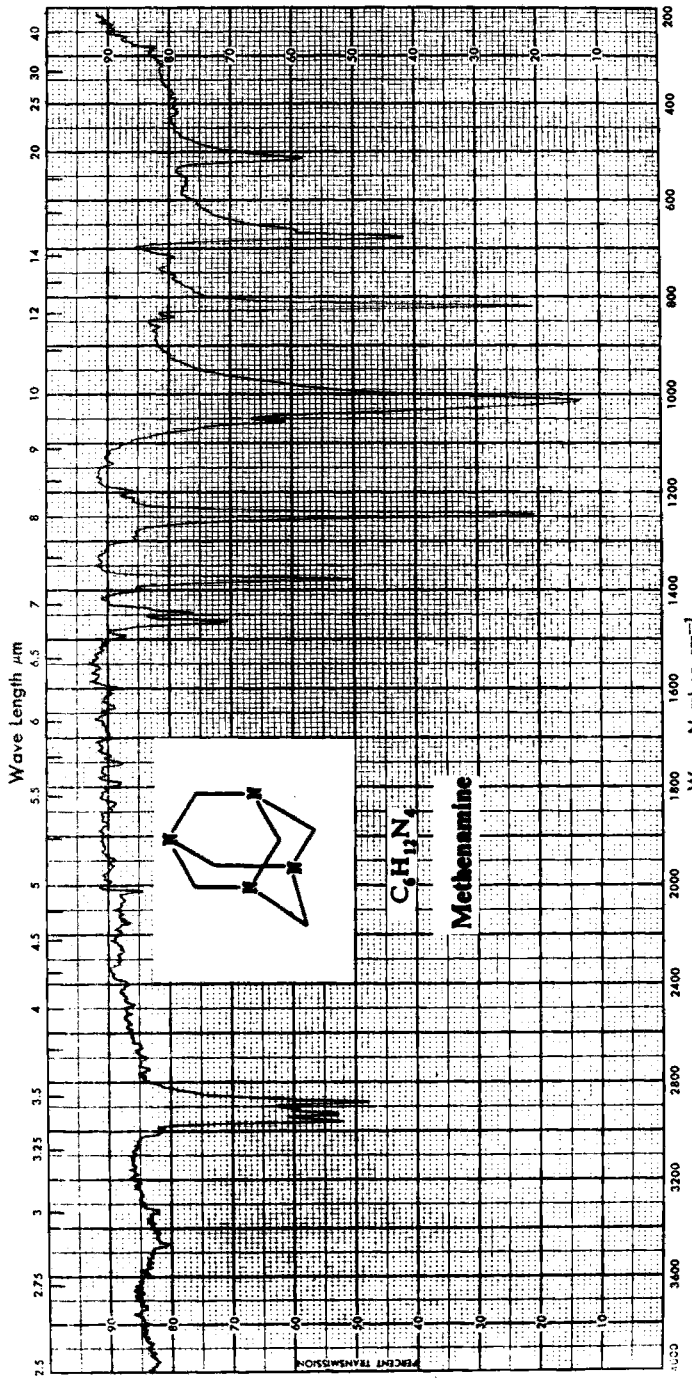

FIG. 1—*Infrared spectrum of methenamine [potassium bromide (KBr) disk].*

uses, including use in the detection of metals and in fuel tablets for camping stoves. The author has previously encountered material from fuel tablets in an improvised explosive-actuated device [5], but the material in the present case was in the form of a pure, white, crystalline powder. It burns with a smokeless flame and its intended use was probably as a fuel to keep the fire burning longer. However, another possible use of methenamine is in the preparation of the high explosive cyclonite, otherwise known as RDX [6].

References

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