

## Development in the field of homemade explosives - TACP

Robert Matyáš

University of Pardubice, Faculty of Chemical Technology, Institute of Energetic Materials  
Studentska 95, 532 10 Pardubice, Czech Republic  
E-mail : robert.matyas@upce.cz

### Abstract

Since the year 2000, there has been a dynamic development in the field of produced homemade explosives (HMEs), driven by the increasing number of terrorist attacks around the world. Typical examples of this development are triacetone triperoxide (TATP) and erythritol tetranitrate (ETN), which were probably first reported as HMEs in 1984 (1) and 2009 (2) respectively, and are now among the most commonly used HMEs by terrorists (Figure 1).

The illicit production of HMEs is limited in European countries by restricting the availability of certain key precursors to the public. However, these restrictions are leading explosives manufacturers to look for new and less and less traditional explosives for which the availability of precursors is not yet restricted. A classic example of this recent development is tetraamminecopper(II) perchlorate (TACP).

TACP as an HME was first reported on the webpages sciencemadness.org dealing with HMEs at the beginning of the second decade of the 21st century. Shortly afterwards, in 2015, the first scientific paper mentioning TACP as an HME was published (3). However, to date, only one paper has been published that focuses on a more detailed description of the explosive properties of TACP (4).

This paper focuses on TACP, its history, chemical and explosive properties and forensic characteristics, including documented examples of its use as an HME.

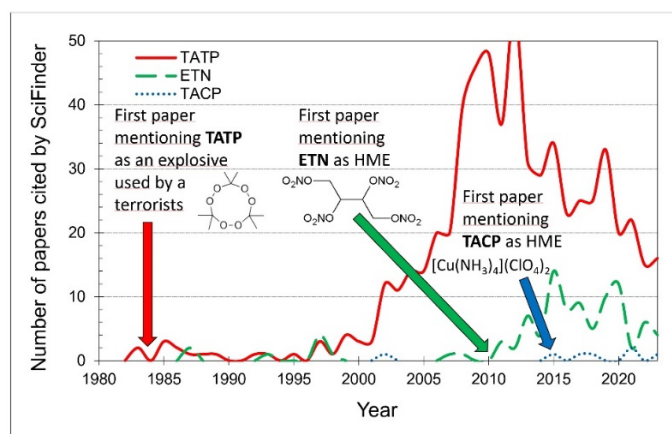


Figure 1 Evolution of the number of published papers on TATP, ETN and TACP cited by SciFinder since 1980. The number of outputs was limited to explosives for each substance.

### References

- 1) S. Zitrin, S. Kraus, and B. Glattstein, Identification of two rare explosives, Proc. Int. Symp. Anal. Detect. Explos., 137-141 (1984) Quantico, USA.
- 2) J. C. Oxley, J. L. Smith, J. E. Brandy IV, and A. C. Brown, Characterisation and analysis of tetranitrate esters, Propellants Explos. Pyrotech., 37, 24-39 (2012).
- 3) M. Künzel, J. Šelešovsky, and R. Matyáš, Characterization of tetraamminecopper salts, Proc. 18th Semin. New Trends Res. Energ. Mater., 664-669 (2015) Pardubice, Czech Republic.
- 4) O. Vodochodsky, M. Künzel, R. Matyáš, J. Kučera, and J. Pachman, Tetraamminecopper perchlorate (TACP): Explosive properties, Propellants Explos. Pyrotech., 46, 280-285 (2021).