

Analysis and Differentiation of Photocopy Toners

REFERENCE: Totty RN: Analysis and differentiation of photocopy toners; *Forensic Sci Rev* 2:1; 1990.

ABSTRACT: The identification and classification of photocopiers presents particular problems for the document examiner. While comparison of defect marks serves to identify copies produced on an individual office copy machine, it is often necessary to eliminate large numbers of machines as possible sources before commencing this detailed examination. Differentiation of toners offers an effective means of achieving this elimination. This review describes the chemical and physical properties of different toners and how these properties can be used for toner discrimination. The chemical composition of bulk toners is outlined together with assessment of the chemical techniques, infrared spectroscopy, pyrolysis mass spectroscopy and energy dispersive x-ray analysis, which have been successfully applied to the analysis of toners removed from copy papers. The different physical properties of toners on paper are related to both their composition and the methods used to fuse toners to the paper. Simple observations such as color, texture and surface appearance, made visible by low power microscopy, offer much discrimination; more can be achieved from examination of magnetic properties and from the use of scanning electron microscopy to study surface morphology. Finally the effectiveness of each technique is assessed and a sequential approach to toner analysis suggested.

KEY WORDS: Chemical analysis, photocopier, questioned document, toner.