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NewFields Note #2

Forensic Microscopy

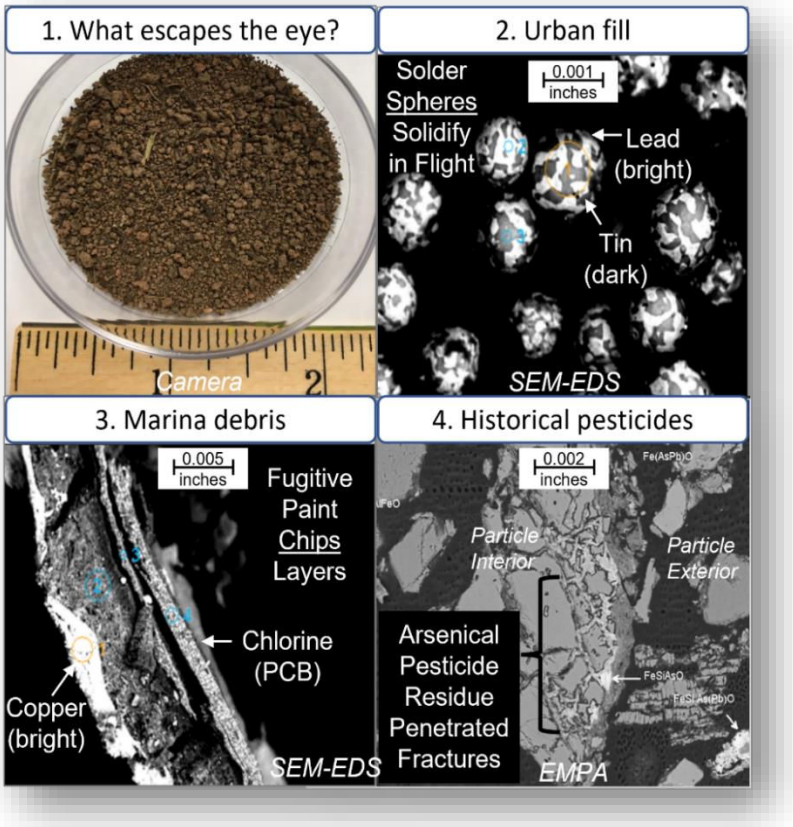
Source Identification Tools for Metals, PCBs, and other COCs

NewFields Note: Technical information in a condensed, easily digestible format that is intended to promote environmental science education, knowledge transfer, and empowerment … *one note at a time.*

Forensic Microscopy extends the rigor of environmental assessment by comprehensively characterizing forensic features of small particles on which a disproportionately larger number of persistent organic compounds commonly partition.

This enhanced resolution is especially efficient at distinguishing natural (e.g., gravel, sand silt, clay) and anthropogenic particles (e.g., historical fill, construction and demolition debris, stack emissions, and pyrogenic residues) far beyond the particle size range of the naked eye which normally serves as the basis for field observations, soil boring logs, and other trusted records commonly relied upon during environmental site assessments.

Unlike field techniques that rely upon bulk visual properties (e.g., color, lithologic composition, stratigraphic change, building debris, etc.), forensic microscopy screens ***thousands*** *of individual particles with source specific shapes, sizes, and residue features that may be critical to understanding the evolution of the site and impacts that may (or may not!) be present.*



These diagnostic features enhance the development of conceptual site models, environmental remediation, and realistic cost allocations. The core instruments (e.g., stereo binocular microscopy, polarized light microscopy, scanning electron microscopy with energy dispersive spectrophotometry, and electron microprobe analysis) provide complementary optical, illumination, and detection strategies capable of addressing a wide range of project specific objectives. The NewFields team of forensic experts and our partner laboratories have developed an extensive reference materials library from which several technical publications are forthcoming.

For additional information, please contact your NewFields Technical Lead. Or send us an email at Science_Info@newfields.com!