

Toxics Use Reduction techniques

Input substitution

Product reformulation

Redesign / modification

Modernization

Improved operation & maintenance

Recycling

Input Substitution

Replacing a toxic substance or raw material with a non-toxic or less toxic alternative.

Product Reformulation

Reformulating or redesigning end products to be nontoxic or less toxic upon use, release, or disposal.

(Product Modification)

Process Redesign

Using production processes of a different design than used previously.

(Process Change)

Modernization

Upgrading or replacing production equipment or methods.

(Equipment Upgrade)

Improved Operations & Maintenance

Modifying existing equipment or methods to improve efficiency.

(Spill/Leak prevention;
Improved inventory control)

Recycling

Recycling, reuse, or extended use of
toxics.

(In-process recycling;
Recycling outside process)

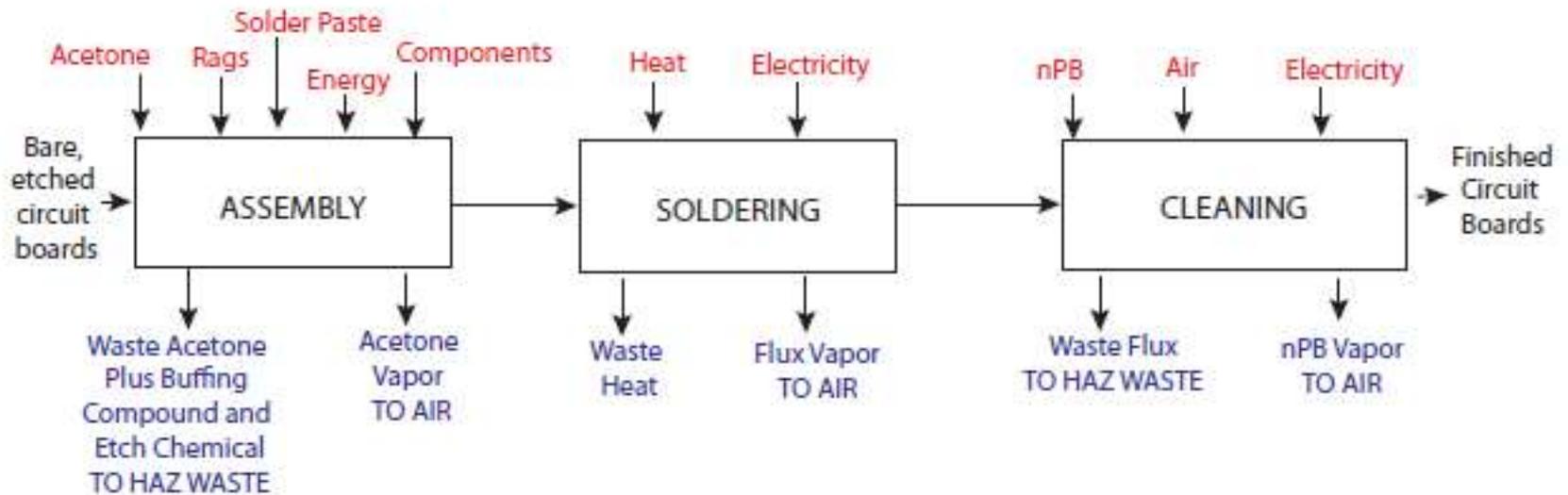
Process Characterization

Maura Hawkins

Acme Electronics example

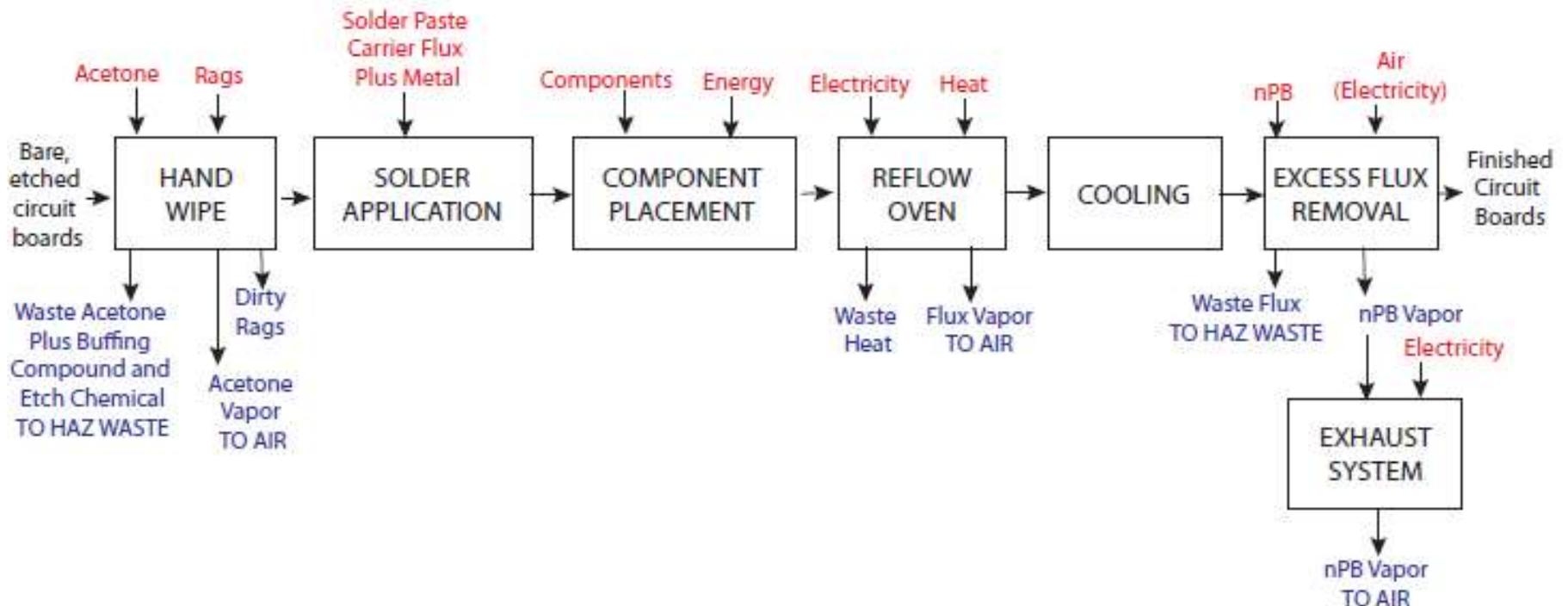
Process flow diagram A

CIRCUIT BOARD ASSEMBLY



Process flow diagram B

CIRCUIT BOARD ASSEMBLY



Acme Electronics example