



General Background Information on Thermal Paper

BPA Alternatives in Thermal Paper Partnership

July 15, 2010

Thermal Paper in Retail and Banking

- Shopping receipts
- Credit card receipts
- ATM & banking receipts



Thermal Paper in Medicine

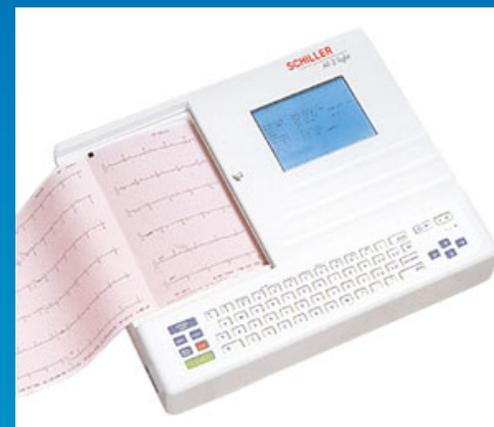
- Ultrasound printouts
- EKG & ECG printouts
- Prescription labels



<http://www.starmicronics.com/printer/Application/Application.aspx?i=11>



<http://www.jphealthcare.com/ultrasound-paper>



http://www.mohawkmedicalmall.com/2009_11_01_archive.html

Thermal Paper in Food

- Food-use Adhesive Labels
 - Deli Meats
 - Supermarket scale labels (meat, cheese, bulk food)



<http://www.nashua.com/ProdAndServices/LabelSupScale.aspx?Selected=LabelTrans>

Other Thermal Paper Applications

- Tickets (parking, airline)
- Gaming (lottery tickets)



http://www.shoptradition.com/store/blog/uploaded_images/lottery-tickets-743063.jpg



<http://www.zimbio.com/pictures/RD7q8nFOyKs/Jessica+Alba+Out+Beverly+Hills/Hndv07-2WS4/Meter+Maid>



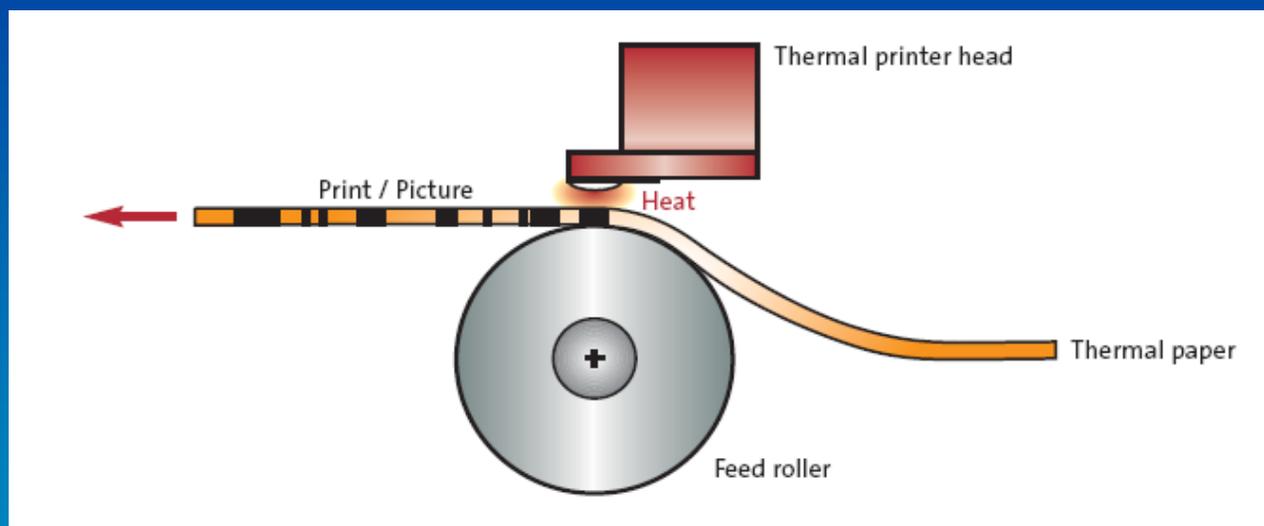
Advantages of direct thermal printing

- Less cost and hassle (no ribbons, inks, etc., to change)
- Few moveable parts; durable
- Printers can be made very small and light weight (imagine the meter maid)
- Excellent edge definition (important for bar codes)
- Programmed to add artistic elements, like logos
- Quiet
- Fast

Types of thermal printing

- **Direct Thermal** (focus of this project)
 - Relies on the dye and developer to melt and react in the coating on the paper
- Thermal transfer
 - Relies on heat to transfer a pigmented coating from a plastic ribbon to the paper
- Dye Sublimation
 - Relies on coating on a ribbon to be heated to the sublimation point and transfer as a gas to the paper.

Thermal Printing Process



From Koehler Product Brochure



Why focus on thermal paper?

Concerns throughout life cycle:

- Unpolymerized BPA at milligram levels in a receipt.¹
- BPA from discarded receipts may leach from landfills.
- BPA may persist through wastewater treatment during paper recycling.
- BPA may persist in recycled paper products.
- Potential for human exposure - workers and the public – and ecological exposure.

1. Personal communication from J. Warner

Potential Exposure Pathways

- Occupational: Factory, Retail, Medical
 - Hand contact
 - Incidental ingestion
 - Dust inhalation
- Consumer
 - Hand contact
 - Incidental ingestion
 - Dust inhalation
- Environment/General Population
 - Surface water
 - Sludge
 - Drinking water



people.bu.edu/johndesz/SEDTL512/HP_lessons/2/JCross/Cashier.jpg&sa=X&ei=_RAuTL_kL4S0IQfhi9niCg&ved=0CAUQ8wc4BQ&usg=AFQjCNFPi7U0jxFJCHD3SgyGADoL6iQxkg

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• www.anu.edu.au/anugreen/?pid=50

Summary and launching points for discussion



- Uses of thermal paper
- Advantages of thermal printing
- Types of thermal printing
- Focus on BPA in thermal paper
- Potential exposure pathways