

UPCYCLING HOSPITAL WASTES

Experience Sharing

United Nations Climate Change Conference, COP 23
Thailand Pavilion, Bonn Zone, Bonn, Germany

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**Improved healthcare
standards also means
“more single-use devices”
for medical treatment**



Approx. $\frac{1}{2}$ kg. of
medical wastes
per bed per day.

Approx. 100,000
Hospital Beds in
Thailand
= 50,000kg/day

Medical wastes



<http://www.bangkokpost.com/learning/learning-from-news/300828/hazardous-waste-illegal-dumping>



> Four tons of infectious hospital wastes in a paddy field in Ayutthaya (2012)

> 3.5 million tons of hazardous wastes produced by industry every year. Only 50% processed legally to make it safe.



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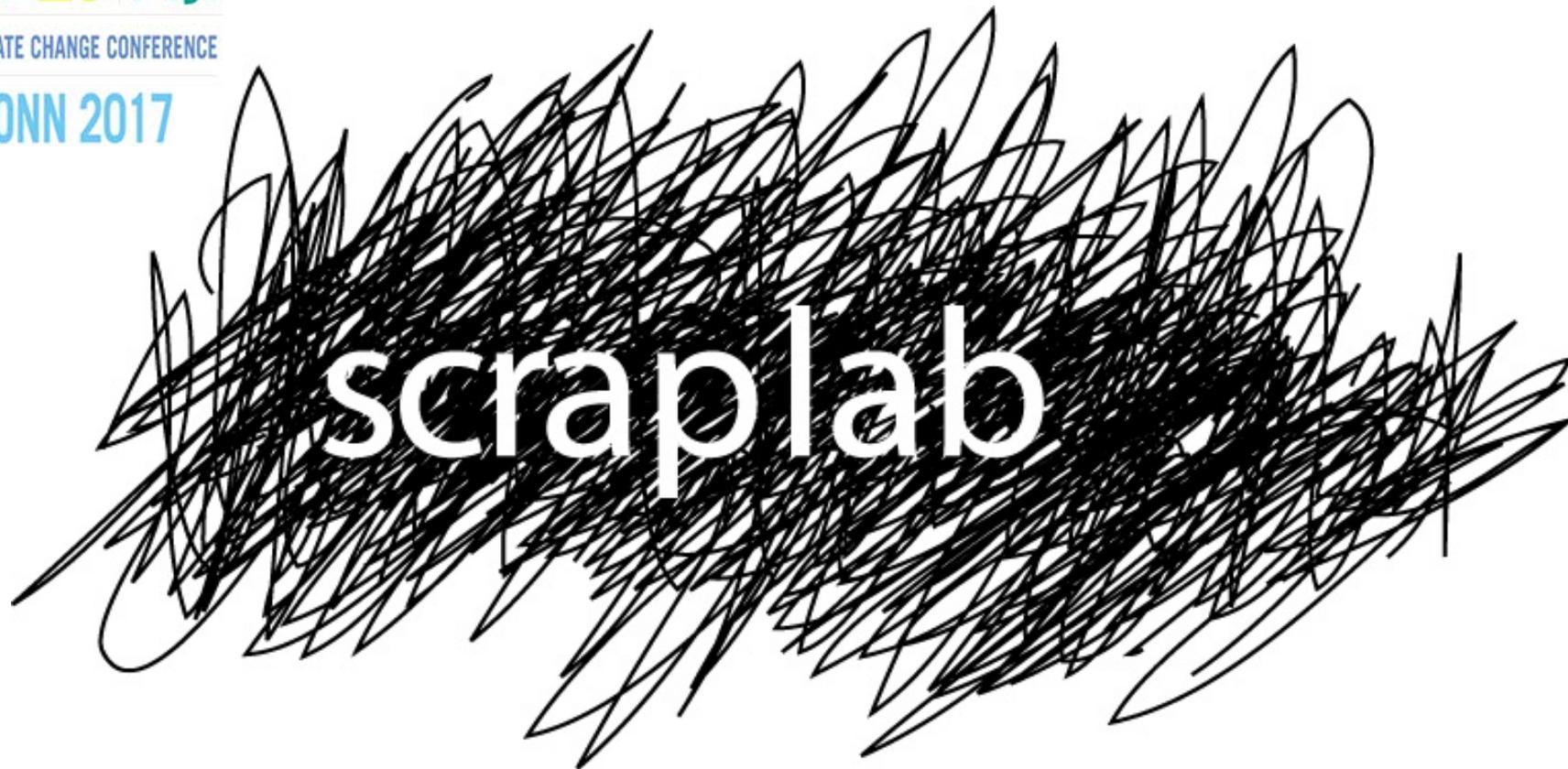
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**Creative Center for Eco-design
Kasetsart University Architecture
Bangkok, Thailand**



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UPCYCLING :

Resource-efficiency

Bringing back
unwanted scraps &
repurposing them
into good use while
creating higher
economic values

Economic growth



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2014-2017

**Bangkok Metropolitan
Administration
General Hospital**

Total 415 Beds



Why would you want to design with medical wastes?

Is it dangerous?!!

Can you really make a product?

Who will buy products made from trash?

I beg you pardon!

Who are your customers?

Can design really create values to these wastes?



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**we started
investigating
hospital discards**





Collaborating with Dr. Patrrarat Tanukit

Syringe packages



Monthly usage

size 3 ml = 12,000 pcs.
 size 10 ml = 24,000 pcs.
 size 50 ml = 240 pcs.

size 5ml = 24,000 pcs.
 size 20ml = 2,500 pcs.

Blood set packages



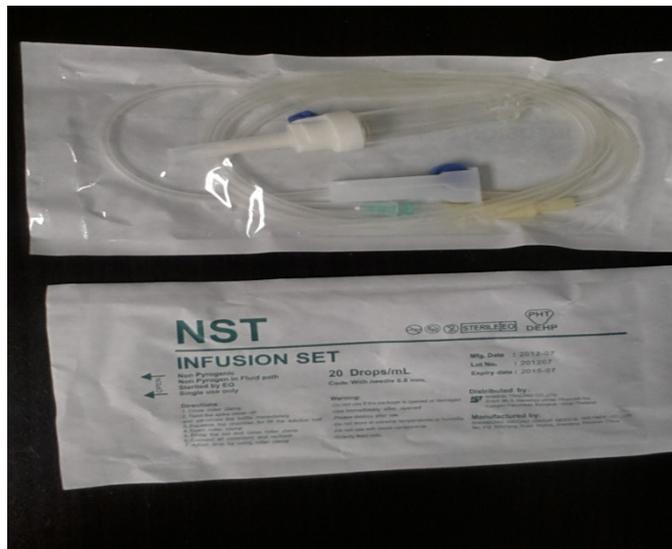
Monthly usage : 800 sets

Polyester Wraps



Monthly usage :
size 45 x 45 cm = 3,000 pcs.
size 60 x 60 cm = 3,500 pcs.
size 90 x 90 cm = 300 pcs.

Infusion set



Monthly usage : 600 sets

Sterile water & Normal Saline bottles



Monthly usage :
Normal Saline size 5 ml = 31,667 pcs.
Sterile water size 10 ml = 16,800 pcs.

Transparent dressing envelopes



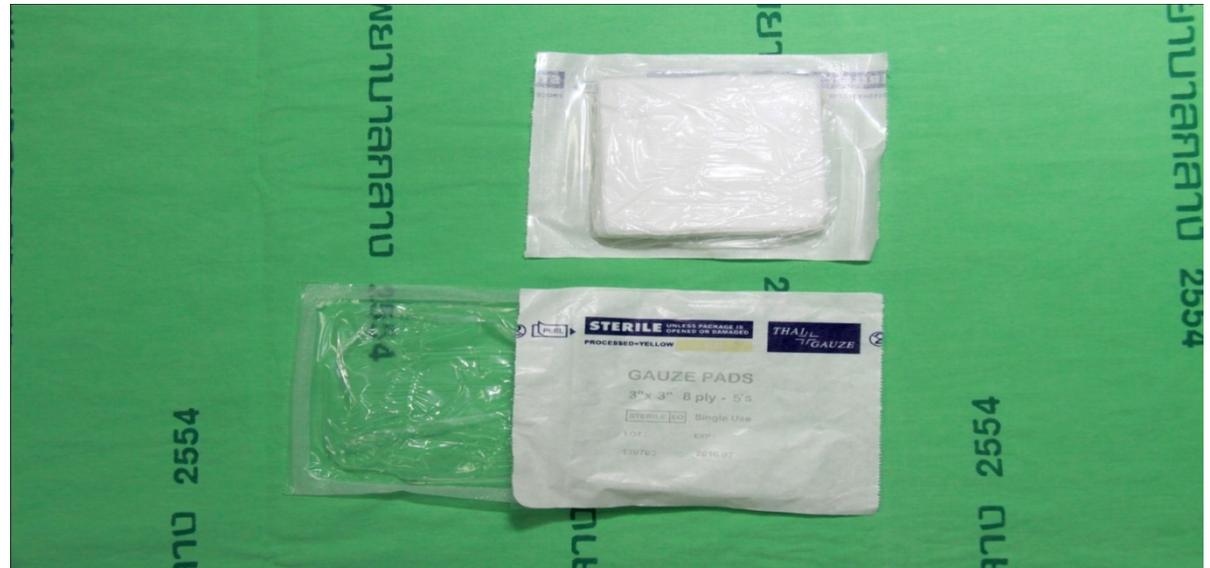
Monthly usage : 4,400 pcs.

Tape dispensers



Monthly usage :
size 1" = 240 pcs.
size ½" = 360 pcs.

Gauze wrappers



Monthly usage : 25,000 pcs.

Medicine packs



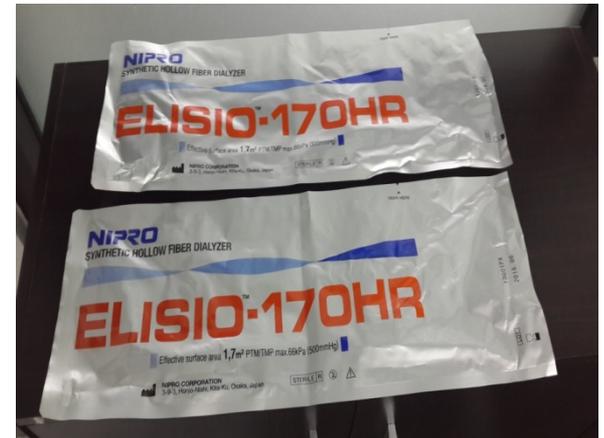
Monthly usage :
Clear envelops = 170 kg/month
Brown envelops = 50 kg/month

Knee prosthesis cases



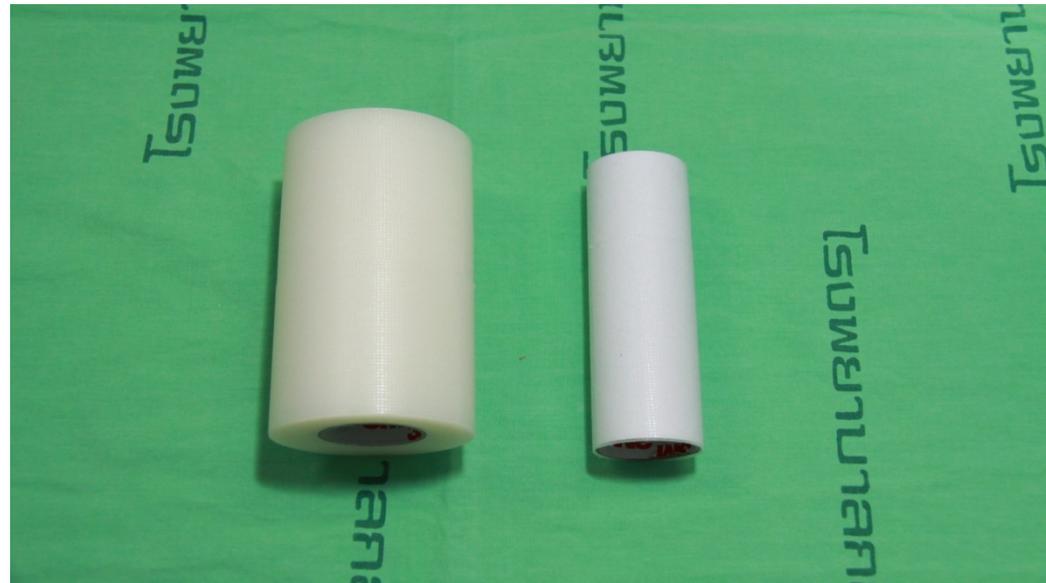
Monthly usage : 25 cases

Dialysis filter packs



Monthly usage :
Sureflux 150E = 20 pcs.
Elisio-170HR = 18 pcs.
FB-210U = 7 pcs.

Tape roll cores



Length 10 cm & Diameter 2.80 cm
Monthly usage : 240 pcs.

Alcohol gel bottles



Monthly usage : size 240 cc = 727 bottles/month

Normal saline solution bottles



Monthly usage : size 100 ml = 1,678 bottles/month

Radivac drain connector pouches



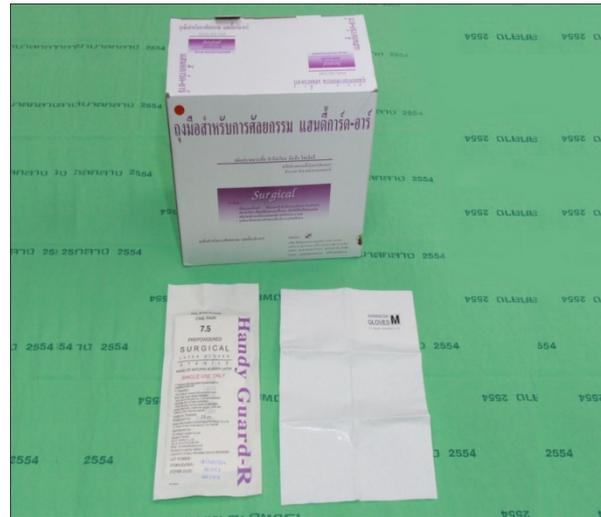
Monthly usage : 300 pcs.

Peel pouches



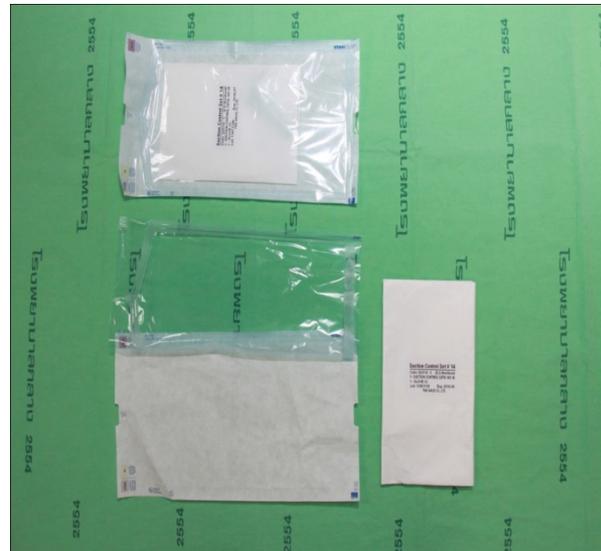
Monthly usage : 4,500 pouches

Sterile gloves envelopes



Monthly usage : 2,500 pcs.

Suction sets



Monthly usage : 10,680 sets



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OVER
200,000 PIECES
BEING THROWN
AWAY PER MONTH!



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**nearly 40% of
hospital wastes
are NOT
CONTAMINATED**



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Hospital Waste Fabulous!

PROJECT

2014-17



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**started upcycling
from available
scraps**

lots of experimentation

Scrap Design Discussion



Scrap Design Discussion



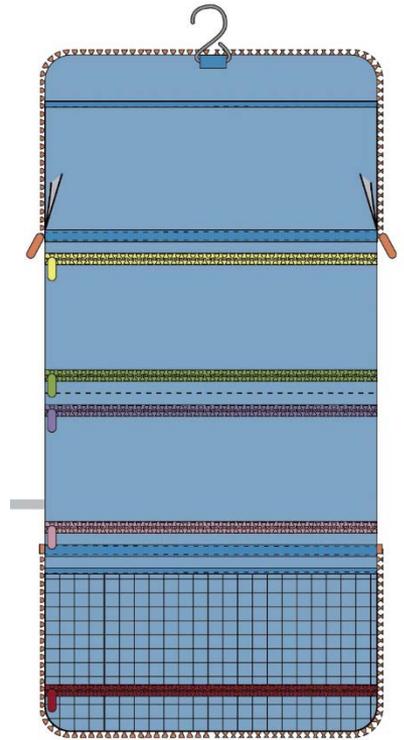
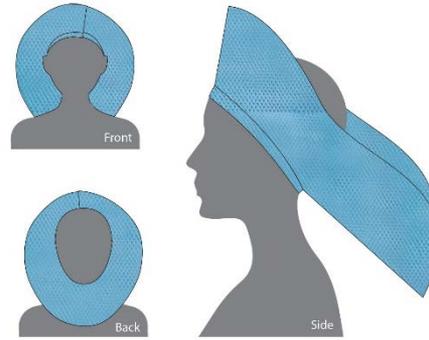
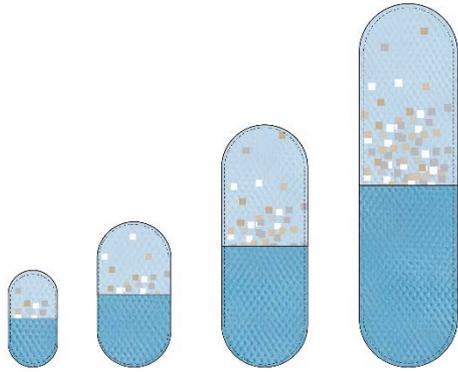


Upcycling Progress

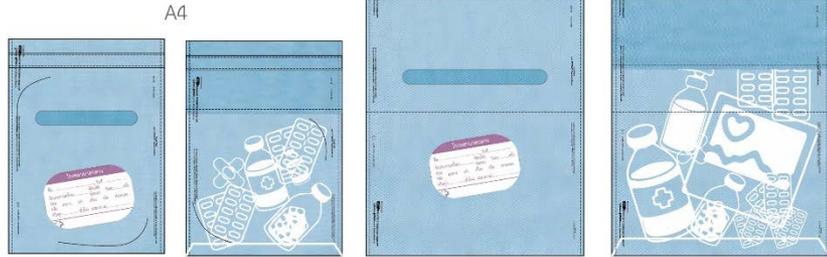


Developing Ideas

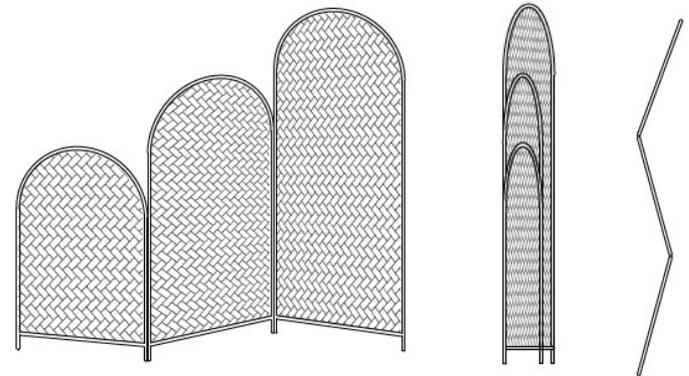
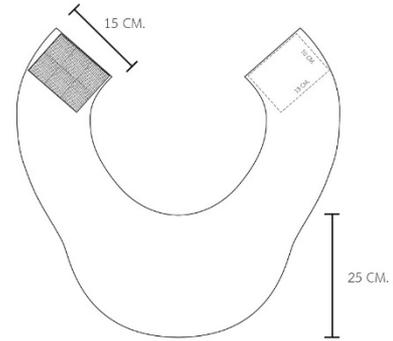




A3



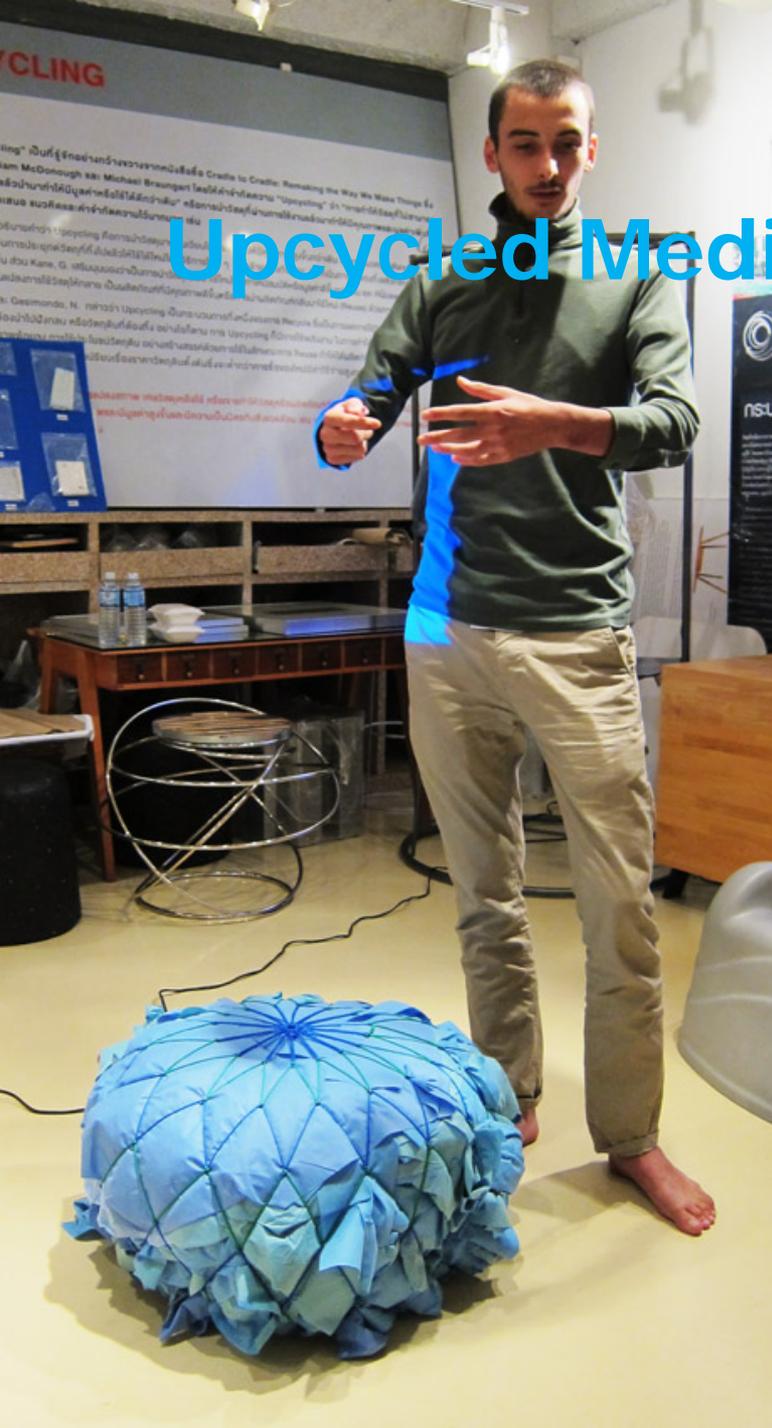
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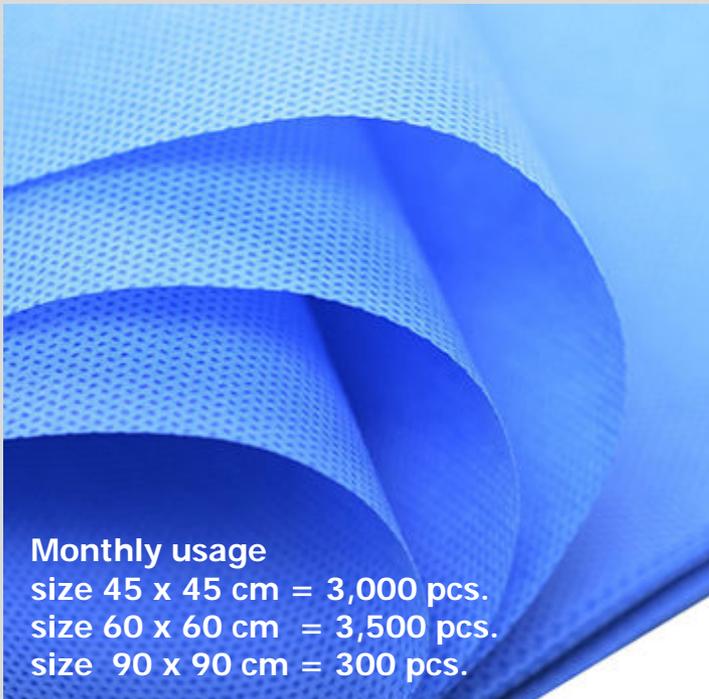
Upcycled Medical Wastes



Upcycled Medical Wastes







Monthly usage
size 45 x 45 cm = 3,000 pcs.
size 60 x 60 cm = 3,500 pcs.
size 90 x 90 cm = 300 pcs.



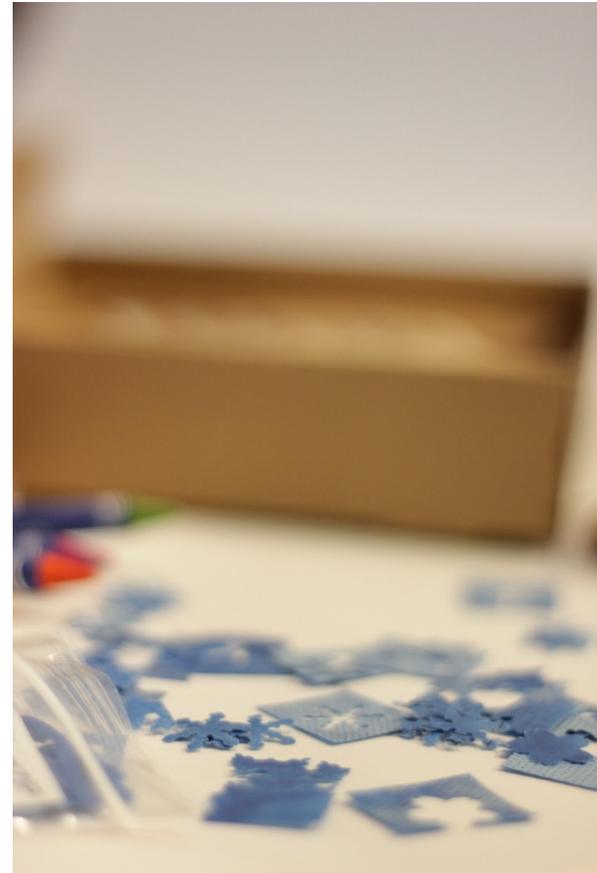
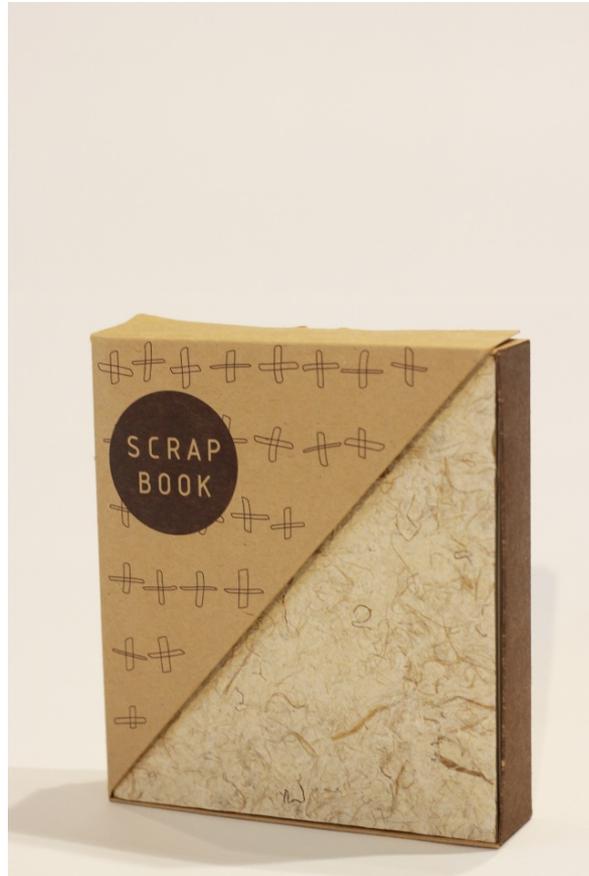


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Eco Scrap Book



- > Can be used anytime patients need
- > Can be used in bed and elsewhere

Scrap Book

ชุดอุปกรณ์ Scrap Book ที่พัฒนาจากร่วมกันของนักออกแบบและช่างเย็บปักถักร้อย
มีความรู้สึกอ่อนโยนคล้ายกับมือผู้ช่วย ที่ต้องช่วยกันเย็บปักถักร้อยโดยไม่เร่งรีบ
และสามารถนำวัสดุเหลือใช้มาทำเป็น Scrap Book ได้ ซึ่งสิ่งเหล่านี้จะช่วยส่งเสริม
ชุดอุปกรณ์ Scrap Book เป็นการบูรณาการงานออกแบบกับการพัฒนาแบบอย่าง
ญาติ ซึ่งถือเป็นแนวทางหนึ่งในการพัฒนาคุณภาพการพยาบาลที่ร่างกาย จิตใจและครอบครัว เพราะเรา
เชื่อว่า การที่มนุษย์สามารถใช้ชีวิตอย่าง มีความคิดสร้างสรรค์ และถ่ายทอดความรู้สึกได้ จะช่วยลดความ
ตึงเครียด ทำให้จิตใจอ่อนโยน



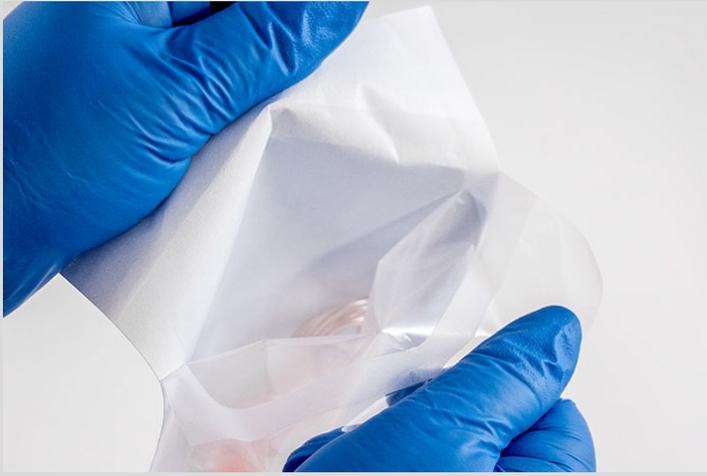


**Patient at BMA Hospital
Bangkok, Thailand**

Surprise! Patient's Relatives are equally stressed and in need of Eco Scrap Books



Patient's Relatives at Klang Hospital



monthly usage : 4,500 pouches





LIGHT BRINGS SMILES

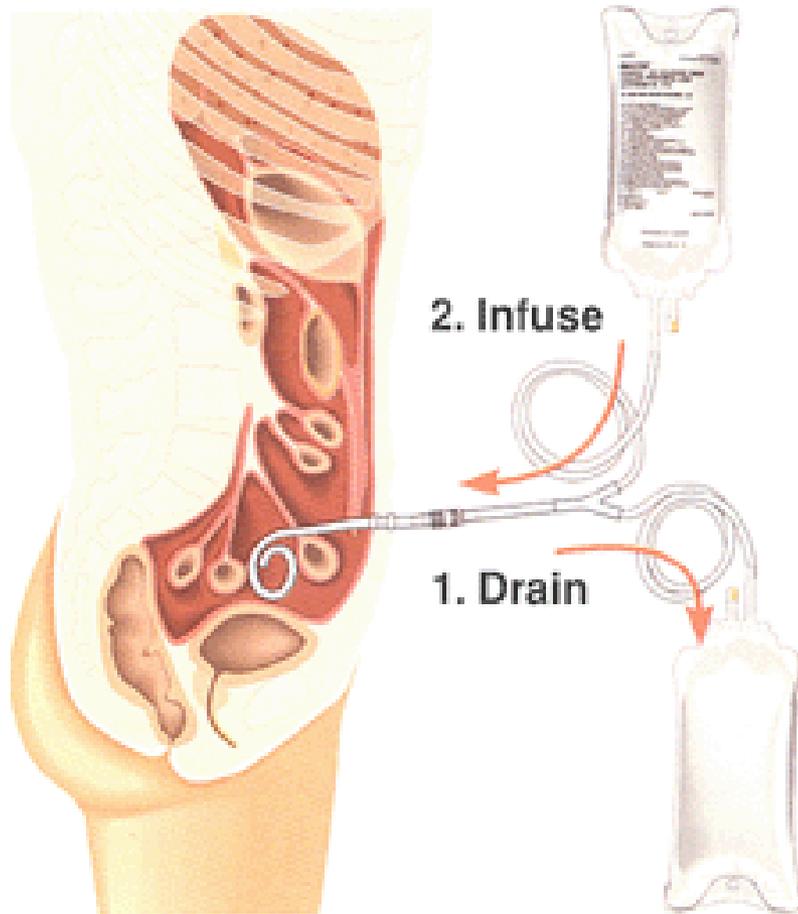


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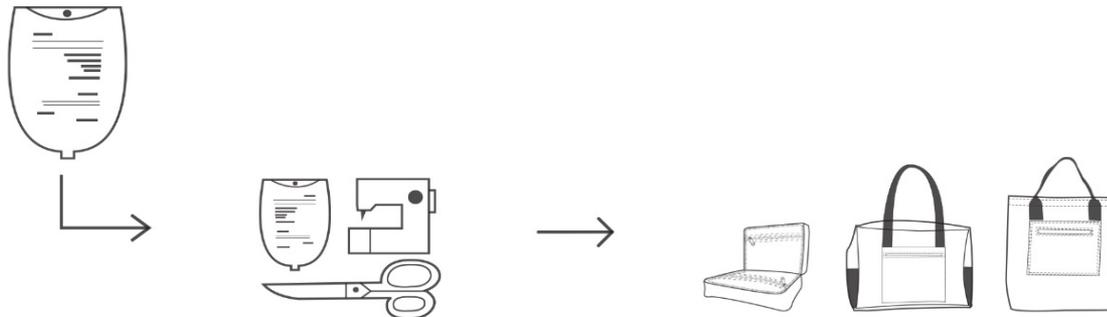
Plastic pouches



Dialysis bags: Trashed >1-million bags per month (based on 10,000 patients)



Collaborating with Scrap Shop @ Kasetsart University



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Instagram

ค้นหา



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UPCYCLING TEAM



Follow

20+ Products

50+ Crews

BMA General Hospital: Upcycling: Value creation with design



Glad we were FEARLESS.

**Glad we UPCYCLE with
hospital staffs**

**Hope to help the WORLD
to recover & recuperate
creatively & sustainably**

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