NEED

• Water borne diseases claim a lot of lives in India
• Indian news journal, Times of India reported 13000 deaths due to drinking water contamination between 2010-2014[1]

Classification of water filters [3]

Reverse Osmosis filters
Gravity non-electric filters
Conventional particle filters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Conventional particle filters</th>
<th>Gravity non-electric filters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtration performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turbidity reduction</td>
<td>60%</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>E.Coli reduction</td>
<td>&lt;20%</td>
<td>No effect</td>
</tr>
<tr>
<td>Availability</td>
<td>Wide variety</td>
<td>Readily available</td>
</tr>
<tr>
<td>Affordability</td>
<td>Very affordable</td>
<td>Initial payments are high. Financing options are poor</td>
</tr>
</tbody>
</table>

Product??

PROPOSED SOLUTION AND RESULTS

• Use wood from conifers (non-flowering plants) as a membrane for filtration

Process of manufacturing filters from wood [2]

Membrane responsible for filtration

- Performance:
  - 99.99% rejection of E. Coli
  - 99.99% rejection of particles > 1 um
  - Capable of achieving high reduction in turbidity

Possible product configurations

CONCLUSIONS AND FUTURE GOALS

• Xylem filters have a low cost and are more effective against E.Coli than conventional particle filters
• We have developed a protocol to preserve these filters after drying to facilitate transportation and storage
• Lifetime tests and fouling studies are currently being conducted
• The possibility of using local trees like chir pine for making these filters is also being explored

REFERENCES

[1] Timesofindia.com

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