Sustainable Product Development

Benchmarking chairs made of Wood, Plastic and Aluminum

(*Guidelines for Designers and Manufacturers)*

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COMPARING ENVIRONMENTAL IMPACT OF PRODUCTS

Chairs made of single material BUT by different manufacturing processes.

Cyclic Load - 420Lb
Life - 20 years

Cyclic Load - 80Lb
Life - 4 years

Cyclic Load - 150Lb
Life – 6.4 years

CHAIRS

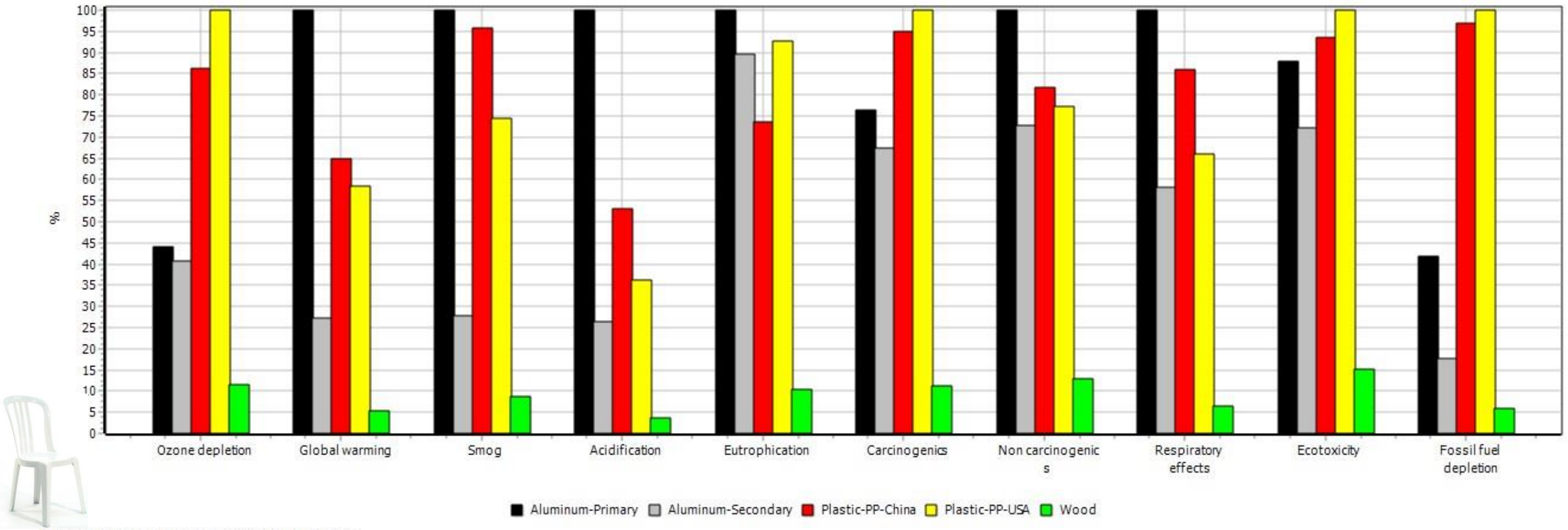
1. Wood
2. Plastic
3. Aluminum

Functional Unit:

20 Years

Source: Dr. Eva Haviarova, Purdue University

LCA on PRODUCTION of CHAIRS (aluminum primary, alum. secondary, plastic China, plastic US, and wood).



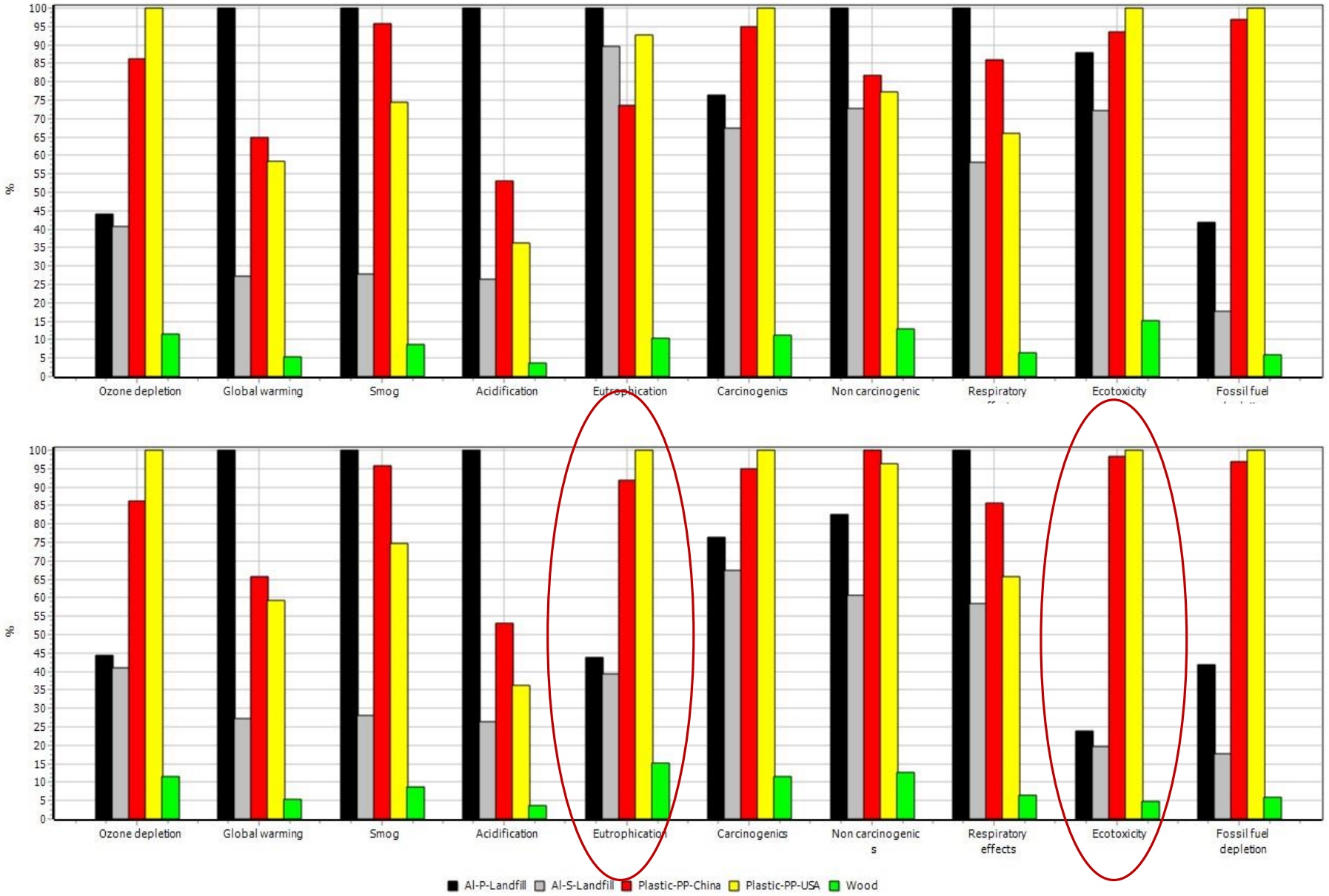
Method: TRACI 2.1 V1.02 / US 2008 / Characterization
Comparing product stages;

Environmental performance of wooden chair is superior to chairs made of other materials.
Increased environmental footprint of wooden chair is caused by finishes and transportation.

SimaPro; Method: TRACI 2.1 V1.02/US 2008/ Characterization; Comparing product stages

Source: Dr. Eva Haviarova, Purdue University

LCA on PRODUCTION and LANDFILL of CHAIRS (aluminum primary, alum. secondary, plastic China, plastic US and wood).



Landfill was added to the production process.

The only significant changes detected in environmental performance were in Eutrophication and Ecotoxicity for aluminum.

Recycling plastic in general is not feasible. Aluminum recycling will be showed later.

Source: Dr. Eva Haviarova, Purdue University