Electronic Product Ecodesign Influence

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Survey of product designers from the Industrial Designers Society of America (IDSA)
Conducted by the Silicon Valley Toxics Coalition and the IDSA Ecodesign Section

This survey was conducted in May of 2003 to measure the level of understanding and influence that product designers have about the environmental issues of electronic products that they design.

Readers unfamiliar with the product development process should to keep the following in mind. Product designers typically work within a product development team that can include many potential candidates, including mechanical engineers, electrical engineers, factory engineers, software developers, ergonomists, market researchers, business managers and materials purchasers. Designers synthesize the needs expressed by the team into a visually cohesive design that meets the variant needs of the client/company and the product's users and buyers.

Product designers participate in the development of most electronic products, so they are excellent candidates for improving the environmental performance of these products. This survey hopes to shed light on the specific areas where designers now do or do not have influence. It suggests areas where designers can potentially be educated to understand these topics more thoroughly.

We assert that this survey reflects typical perceptions of working product designers. We hope that this information is used to improve the understanding of environmental impacts of electronic products by the industrial design profession, the electronic product companies that they serve, and the public who buy, use and dispose of the products.

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Philip White IDSA, Orb Analysis for Design
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The survey was distributed to members of the IDSA Eco-Design section and the IDSA Electronic Product group. 52 designers responded, comprising of roughly 60% working in corporations and 40% working in independent design consultancies. Roughly 18% of respondents worked outside the U.S. Presented results have been averaged for conciseness. Selected comments are also reported.

Chart A indicates the dominance of the Internet as a source of information about the environmental aspects of materials (and probably other related topics) for product designers. Other* sources cited include periodicals, environmental managers and word of mouth.

Chart A   **Source for material environmental impact information**
(averaged values)

Other*	
Clients	
Material manufacturers	
Design workshops/conferences	
Online	

0   5   10   15   20   25   30   35   40   45   50

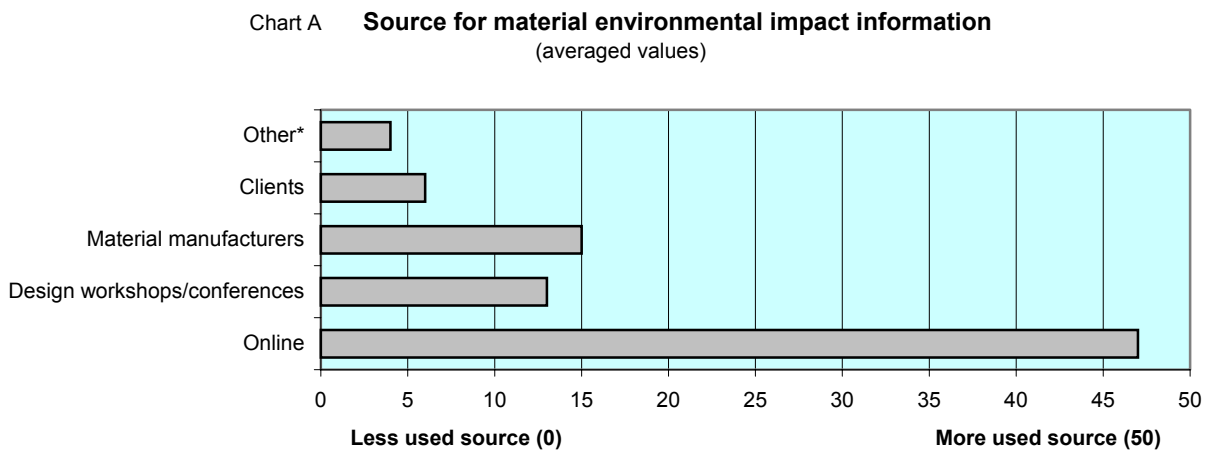**Less used source (0)**   **More used source (50)**

Chart B shows that product designers are familiar with the fact that lead is hazardous and with the generic concept of "Design for the Environment". The more technical and legalistic topics are far less familiar.

Chart G   **Effective information to convince clients/managers about ecodesign attributes**   (averaged values)

Industry reports	
Cost analysis	
Case studies	
Life cycle assessment	

0   5   10   15   20   25   30   35   40

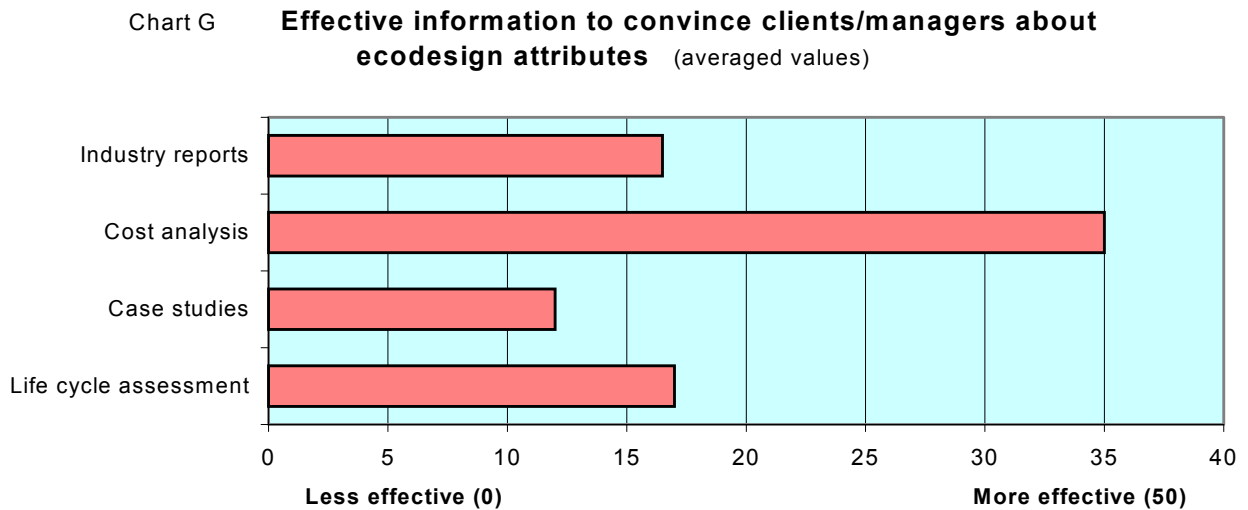**Less effective (0)**   **More effective (50)**

Chart C shows the range of perceived level of influence that designers have over these environmentally consequential attributes that can be grouped into three sub-groups. First, designers have unquestionable influence over product form color and texture. The next group includes finish type and plastic type (including recycled content) and attributes directly related to ease of disassembly for recycling (including access to internal parts and inserts in plastic parts). Designers have the least influence over additives to plastic, toxic content of electronic components and solder types. Designers report that their clients and managers rarely supply information about toxic materials (including brominated flame-retardants and lead) and rarely require design for disassembly or recycled plastic content. One designer cited that a client (Intel) limits recycled plastic content to 10%.

Chart C **Ability of designers to influence design attributes**
(averaged values)

Design attribute

Design attribute	
Circuit board solder type	
Toxics in electronic components	
Additives in plastic (phthalates, etc.)	
Flame retardant in plastic	
Plastic type (incl. recycled content)	
Multi-material inserts in plastic	
Ease of disassembly	
Access to internal components	
Finish type (paint, lamination)	
Form, color, texture	

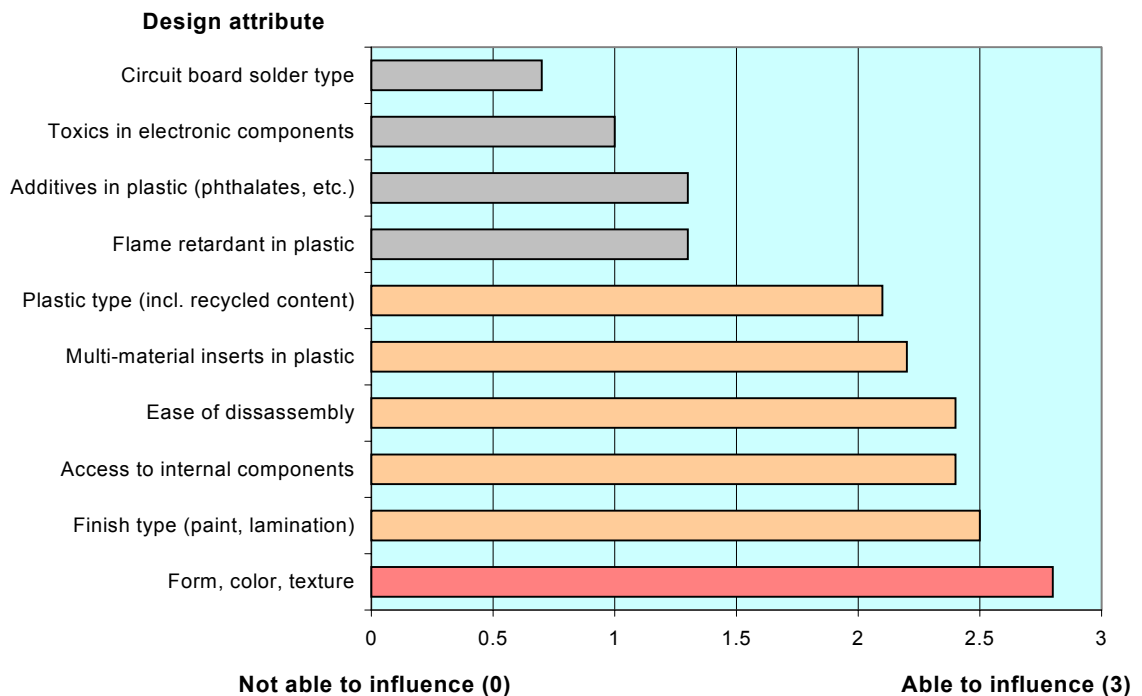Not able to influence (0)   Able to influence (3)

Chart D indicates that the environmental impact of the product was perceived by designers as having the lowest priority of all of the product qualities in question. This sobering chart indicates how poorly environmental performance of products is integrated into the product development process.

Chart D **Product quality priorities for products designed**
(averaged values)

Environmental impact	
Brand presence	
Certification/safety compliance	
Appropriate feature set	
Appearance	
Quality/performance	

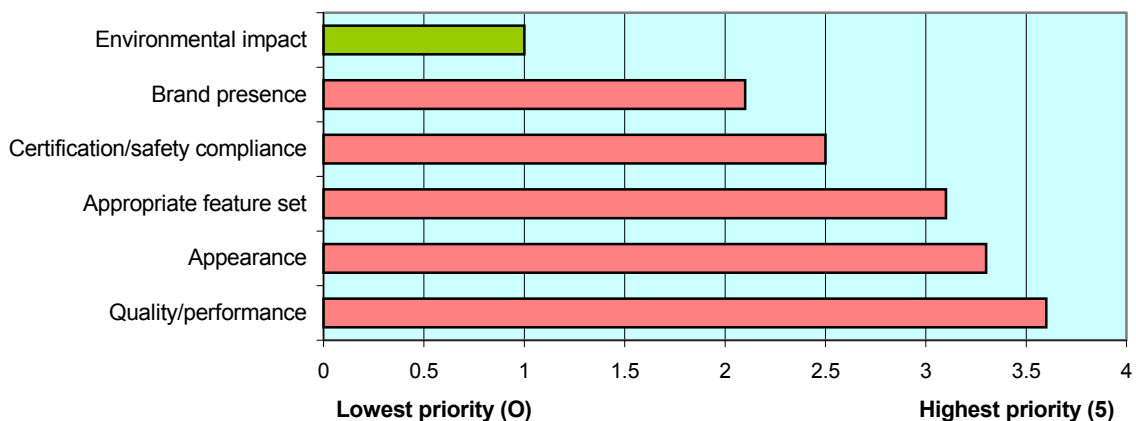Lowest priority (O)   Highest priority (5)

Chart E demonstrates how rarely the clients and managers of designers supply information about toxic substances or restrictions on them (including lead and most brominated flame-retardants). An equally small percent of clients/managers require design for fast disassembly or recycled plastic The survey asked designers to check a range (0-20%, 21-40%, and so forth) and we averaged the 0-20% range as 10%, so these values may be high. The observations are none-the-less the same.

Chart E **What percent of designer's clients/managers . . .**
(averaged values)
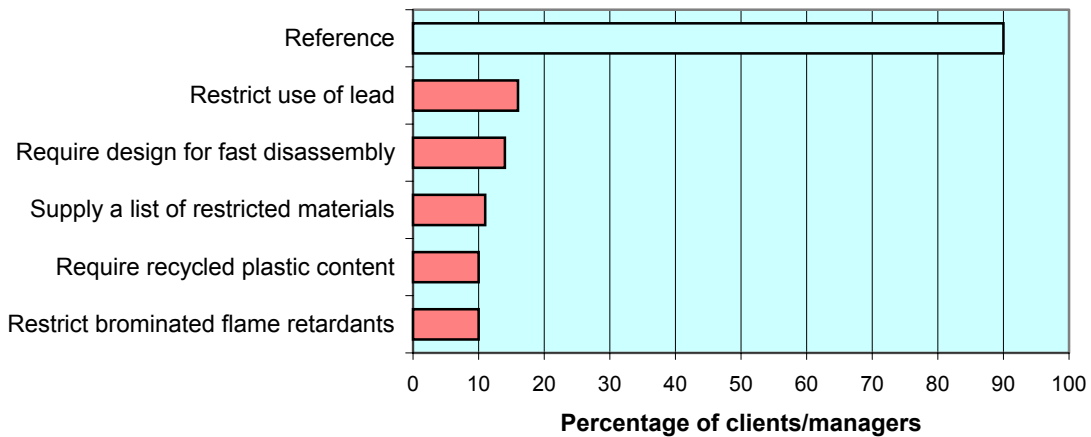

Percentage of clients/managers

Chart F illustrates a disparity between the importance of the environmental and human health impacts of the products to the designers, who consider them to be very important, to those of their managers and clients, who, for the most part, do not consider them to be important. This is a reflection of the frustrating psychological reality that many designers experience.

Chart F **Importance of environmental and human health impacts of products to . . .**   (averaged values)

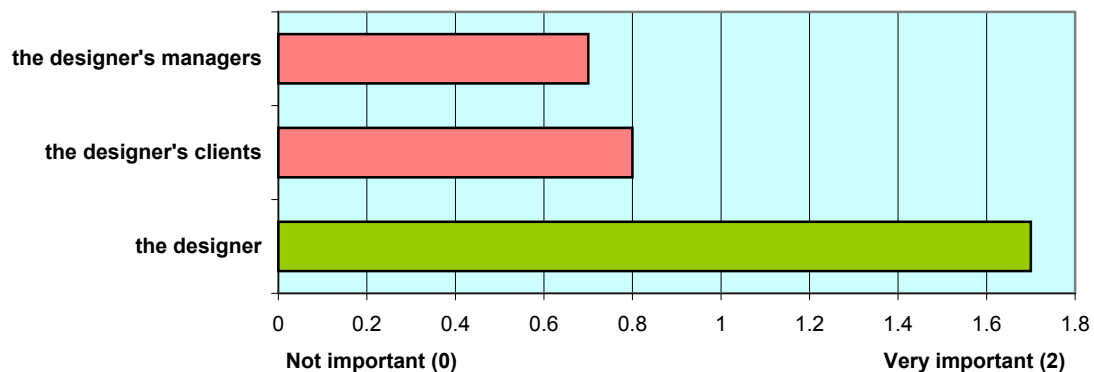Not important (0)   Very important (2)

Chart G shows the dominance of economic information in influencing clients and managers about the benefits of an environmentally friendly design attribute. The potential economic benefits of increasing sales from promoting a more environmentally friendly product can be influential, if that information can be substantiated. This also shows a lack of understanding by both designers and clients/managers about Life cycle assessment (LCA) and how that can potentially be used for economic benefit.

Chart G   **Effective information to convince clients/managers about ecodesign attributes** (averaged values)