The Pharos Project: Solving the Building Materials Toxicity Challenge

Abstract

The founder, Bill Walsh, with a background in law and a passion to protect the natural environment, has built a nonprofit venture that has pioneered the awareness of toxicity issues in the building industry. He finds himself at a crossroads because he needs an infusion of cash to bring to market the database on building product toxicity he has developed. The options include whether to radically change the way he manages his nonprofit in order to grow or to change the company status to a Benefit Corporation. Bill is unsure whether he is the right person to implement either alternative.

"We've spent the last four years building the most comprehensive database on the toxicity of building materials out there, but now we have to get it into architects' hands. I need to build the organization to make it happen." Bill Walsh was founder of the nonprofit Healthy Building Network (HBN), whose main project had been the development of the toxicity database. He was now trying to decide which of two approaches might have more significant impact on getting toxic materials out of buildings. One approach was to begin to grow his nonprofit organization. The other approach was to form a Benefit Corporation or B-Corp. In July 2010, B-Corps were a new concept whereby for-profit organizations could raise money but still focus on their social missions rather than just focusing on maximizing returns to shareholders. Bill was intrigued by the B-Corp concept and wanted to find out more about it. He knew that raising money from investors would give him more resources in order to scale his business faster, but he also knew he would have to build the business. He was conflicted as he observed:

> I have never built or run a real organization. The way I have run my nonprofit is as a virtual micro business. We have a few employees who telecommute from all over the country and it has worked well. But if I take the money, I have to build the business and I am not sure I am the one to do it.

Bill's Career in Toxicity

Bill's thinking on how to manage health and toxicity issues in the building industry had developed as a result of the experiences he had over 15 years with US PIRG (Public Interest Research Group) and Greenpeace. Bill graduated from Northeastern University Law School in Boston in 1985, where he discovered he preferred policy rather than individual representation. He became interested in toxicity issues as a result of representing a woman who had become sick after a Chem-Lawn spraying of her yard. Through that case he was networked into US PIRG and the superfund reauthorization. He

became knowledgeable about the Environmental Protection Agency's (EPA) federal right to know what chemicals were being used in various applications. This led to him, in 1987, accepting a position working for Greenpeace in its toxicity legislation department. He decided not to pursue the legislative route, however, because he saw too many other organizations already doing that. Instead, he managed grass root campaigns and shifted from attempting to stop the disposal of hazardous wastes to pioneering preventing their entry into the system. His first project was to advocate stopping the use of chlorine and polyvinyl chloride plastic (PVC). In his second project, he found himself opposing DuPont on ozone-depleting gasses used in refrigerants. It was during this experience that Bill had an insight that changed his strategic thinking:

> In attacking DuPont, Greenpeace never accomplished anything because DuPont controlled the discussion – they had the chemists and the replacement technology. DuPont, therefore, could manage the transition between the harmful coolants and the deemed safe ones in a way that maximized DuPont's profits.

Therefore in his third project for Greenpeace, which was stopping the use of lumber from endangered trees, he decided to change tactics - he went after the main retailer rather than the lumber companies. He went after Home Depot. The "Home Depot experience" triggered additional changes in his thinking:

> Home Depot wanted to do the right thing and had hired some very smart environmental people. They were asking some very tough questions, such as: If they did not use certain hardwoods, what trees could they use? If they gave into Greenpeace, what would stop another group from coming in and making conflicting demands?

Bill's insights led him away from simply trying to stop a company's behavior and toward helping the company solve a problem. Home Depot did, in fact, change its buying behaviors, and Bill recollected, "We saved more forests by working with Home Depot than any piece of legislation could."

The idea to launch his own venture, the Healthy Building Network (HBN), came when Greenpeace wanted to build an extension to its headquarters. Consistent with its mission and position in all matters eco-friendly, Greenpeace was committed to using only safe building materials. It wanted to use this HQ building extension as a best-case example for the burgeoning environmentally conscious community, but, ironically, the decision makers were unable to reach an agreement on what was considered "safe". Bill observed, "If an organization like Greenpeace could not figure out what were safe materials, then I *knew* there was a problem needing a solution."

The Healthy Building Network

In 2000, Bill decided to leave Greenpeace so that he could focus his energy on the issue of the healthfulness of building materials. He formed HBN as a nonprofit, 501(c)(3) organization in Washington, D.C. Its mission was to focus on improving the human health impact of building materials. At the time, many commonly used building products contained undisclosed chemical ingredients that were hazardous to humans. An example of a dangerous building material was pressure treated wood, which was infused with copper, chromium VI, and arsenic - all known hazards to human health and the environment. Pressure treated wood was given an exemption by the EPA for the use of arsenic and for the disposal of the wood, even though it contained hazardous materials that legally could not go into landfill. Until 2004, pressure treated wood was the most common source of arsenic exposure for children and adults in the United States. Due to this loophole for pressure treated wood in waste disposal laws, arsenic leaking from the wood in landfills was implicated in groundwater contamination. Another common building material, PVC, was estimated to be the single largest material source of dioxin

to the global environment over the course of its life cycle: production, use, and disposal. For these reasons, HBN committed to employing comprehensive lifecycle thinking when evaluating green building materials. Substituting cost-effective, healthier building materials for these toxic products was considered by Bill the single most effective step he could take to preserve and regenerate the environment, and to protect public health.

HBN also was deeply committed to the goal of achieving environmental justice because the poor tended to suffer the most from pollution, not only in the polluting countries but also in other parts of the world. Bill shared his frustration:

> Studies in the United States had repeatedly demonstrated that poor communities and communities of color suffer disproportionate environmental and health impacts associated with heavy industry and waste facilities. The globalized economy often inflicts environmental and human health consequences upon indigenous peoples living far from the site – and presumed economic benefits – of industrial activity. Inuit women, for example, living subsistence lifestyles in far northern Canada have higher concentrations of industrial chemicals in their breast milk than any other community of women on Earth. I am mindful of David Orr's observation that, "Nothing is beautiful that causes ugliness in any other place or at any other time in the world."

The way Bill managed the HBN organization was a marked departure from his experience at Greenpeace. Greenpeace went from being cash poor to cash rich almost overnight, after the French Government was required to pay for the sinking of Greenpeace's ship by the French foreign intelligence services in 1985. It grew very fast but did not put any business processes in place and had no sense of building a formal organization. Bill, and several of his HBN colleagues, had experienced difficult organizational issues at Greenpeace that had resulted from this rapid, uncontrolled growth. Shortly before he left, the organization experienced a significant budget shortfall so it had to do a massive

downsizing. Bill recalled, “Greenpeace also had an unmanageable board of directors who were famously ineffective when it came to making big decisions.”

Bill, in contrast, had deliberately built HBN as a small team of ten full-time people located around the country. They telecommuted and interacted virtually. The team consisted of advocacy experts who could share research on specific environmental issues. Although HBN was headquartered in Washington, D.C., Bill lived and worked in Vermont. There was an administrative assistant in the DC office, but that was the extent of the organization. Bill raised his money from a circle of friends, through grants, and through one major donor who believed in his work. Instead of, as many nonprofits do, creating a cumbersome board of people who have given large sums to the organization, Bill created a board of three people, all non-voting. He was adamant that he did not want to give up any control.

When HBN started out, the approach that Bill and his colleagues took was to identify a very significant health hazard problem – such as the chemicals used in pressure treated lumber – and mount what was referred to by Bill as a “market campaign” to raise awareness of the problem. Bill’s thesis was that targeted market campaigns increased awareness of health hazards, which would subsequently alter consumer purchasing behavior. At the same time, HBN developed fact-based research to supply evidence to support its claims that products that contained what HBN deemed toxic chemicals were a serious health hazard. The ultimate goal was to pressure manufacturers into eliminating or reducing the problem chemicals used to make the product. This could come about by consumers voicing concerns and by decreasing their purchases of the product. Another strategy of the campaign was to form alliances with other committed individuals and groups who held similar concerns, in order to secure more influence. Although it was not the primary goal of a market campaign, it was also hoped that a secondary effect might be to stimulate governmental action to restrict – or even ban – the use of the toxic materials.

HBN's pressure treated lumber campaign was successful. With a diverse coalition of partners, HBN launched a campaign in 2001 that transformed the treated-wood industry. By 2003, major manufacturers agreed to end the use of arsenic-treated wood in 80% of their product line, and the EPA halted the manufacture and sale of arsenic-treated wood for most residential uses as of January 1, 2004. However, it began to become apparent to Bill that the "single-issue" campaign, while having the virtue of focus, had the downside of limited scope; the kind of fundamental transformation of an entire industry that he was envisioning would be very difficult to achieve by going after one hazardous product at a time.

The Pharos Project

HBN had been very successful on multiple levels. Bill proudly stated:

> Since 2000, our projects have directly resulted in the introduction of new, healthier building materials into commercial markets, shifting over $4 billion in materials purchases from toxic materials to healthier alternatives. We have played a key role in establishing precedent-setting green building guidelines for health care facilities and in demonstrating well-built, healthy and green modular homes to the affordable housing market in the Gulf States region.

But Bill wondered, "What if, instead of providing consumers with health hazard information on a single product, it was possible to provide them with this same information on a large number of products?"

The Pharos Project was the answer that Bill developed to address the limitations of the single-issue campaign. With the advent of the Internet and the availability of low-cost software development tools hosted on personal computers, the barriers to entry into the software application world were becoming fewer every day. Bill knew he needed an experienced person to lead the investigation into

how to create this kind of health hazard database. He remembered Larry Kilroy from his time at Greenpeace, and approached Larry about joining HBN in 2006. Larry had experience in several companies developing online database systems, and he agreed to come onboard and help HBN determine what could be done. Within the first year after he joined HBN, Larry had created a prototype of an online database and analysis system, which would be able to catalog building products based on their chemical composition.

Bill explained why he named the project "Pharos":

> Just like the mythological lighthouse, the Pharos system would be able to penetrate what had heretofore been the un-seeable depths of products' chemical compositions. It would illuminate chemicals of concern, and allow a consumer to find and specify products whose health hazard performance was superior to others.

The challenge the team still faced, however, was that Pharos was not the first such product in the environmentally friendly building market. Because the demand for "green building" had been booming, several startup companies had developed and introduced their own green products databases. Bill and Larry still had to work on how Pharos was going to be more effective than the others.

Green Building Products

There was a growing need on the part of building professionals, particularly specifiers of building products (primarily architects, designers, engineers and contractors – "AEC"), to understand the "green" (environmental and sustainability) characteristics of building products. The strength of this demand was considerable, as shown by data on green building trends. Green buildings used environmentally friendly building practices, and a main element was to use nontoxic materials. According to McGraw-Hill

Construction[1], demand for green buildings rose 50% from 2008-2010, during one of the worst construction markets in recent times. In 2010, the U.S. market was estimated at $71 billion, representing 25% of new construction – and was projected to grow to $135 billion by 2015. Fueled by this growth in demand for green buildings, green building products had proliferated. Green building products comprised any component part of a building, ranging from interior finishes to structural beams to exterior cladding, and everything in between. According to a report from the Freedonia Group[2], the market for green building products was $58 billion in 2008 and was forecasted to grow at 6% annually through 2013.

The real growth in the demand for green building products was conflated due to a vast range of claims about what made a building product "green." Bill pointed out, "Building product specifiers find it increasingly difficult to differentiate between legitimate and 'greenwashing' claims for the thousands of new products that are being introduced to meet this demand." The proliferation of self-promulgated "standards" in the green building community was quite stunning; there were estimated to be over 100 competing "standards" that potentially applied to green building products. These included: independent third party certifications; industry-wide standards; corporate standards; single attribute ratings; multi-attribute ratings; proprietary labels, and credits within green building rating systems. In addition, there had been a number of government laws and regulations already passed. Two recent studies determined that commercial buyers, including those in the building industry, found the standards confusing and ineffective.[3]

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[1] "Green Outlook 2011: Green Trends Driving Growth," McGraw-Hill Construction, November 2010.

[2] "Green Building Materials, US Industry Study with Forecasts for 2013 & 2018," The Freedonia Group, February 2009

[3] 1) The Global Ecolabel Monitor can be downloaded at: http://www.ecolabelindex.com/downloads/Global_Ecolabel_Monitor2010.pdf. (2) Informing GreenMarkets: The Roles of Industry, NGOs and Government, by Thomas P. Lyon and Julian Dautremont-Smith can be downloaded at: http://www.erb.umich.edu/News-and-Events/news-events-docs/10-11/InformingGreenMarkets.pdf

The Product Specification

Bill and Larry continued to refine their vision of the Pharos System. They first analyzed what all the other companies were doing and found that they were not necessarily focusing on product toxicity. (See Exhibit 1 for a listing of competitors.) Part of the reason for this was what was required to get LEED certified. LEED (Leadership in Energy and Environmental Design) was a voluntary, consensus-based, market-driven program that provided third-party verification of green buildings. However, an analysis from the research group Environmental and Human Health, Inc.[4] concluded that "green buildings" could achieve the highest level of LEED certification without necessarily addressing toxicity in the building materials used. Therefore, in other Green Building Product Directories, the primary emphasis was on the following building product characteristics:

1) Recycled and renewable material content,

2) Volatile Organic Compound emissions that met certain state and other standards,

3) Contribution to a building's energy efficiency, and

4) Contribution to a building's carbon footprint

[Insert Exhibit 1 here]

From the competitor analysis, Bill decided that the competition had yet to address the toxicity issue. The differences among building products, based on adding complete toxicity and healthfulness data, could be very significant. For example, some products certified to indoor air quality standards covered by the above certifications could still emit toxic chemicals into the air. Also, recycled content could contain toxic heavy metals. By incorporating extensive health and toxicity information with the certifications, Pharos would fill this critical information gap and provide a unique solution for this need.

[4] "LEED Certification: Where Energy Efficiency Collides with Human Health," Environment and Human Health, Inc., May 2010

Pharos would provide this information and add extensive, verified data on the full spectrum of product healthfulness and toxicity attributes. Specifically,

- Pharos would provide comprehensive evaluation of building product ingredients, based upon independently-verified information on the chemical and materials properties of the products.
- Pharos would make it possible for building professionals to discriminate – by healthfulness and toxicity characteristics – among products that were certified and/or LEED qualified.
- Pharos would integrate completely product toxicity and healthfulness criteria with all other key environmental criteria.

Market Research

Bill and Larry needed to answer two questions: would customers want Pharos and would they be willing to pay for it. They started talking to potential users in 2009. They found that not only did the product have to provide relevant information, but the product also had to fit with the way the design specifiers worked. The AEC community used tool suites to create their architecture designs. These included computer-aided design (CAD) and modeling tools. Once they adopted a tool suite, they were very hesitant to switch. Pharos, therefore, would have to be compatible with all the existing tool suites. Not all modeling tools used a common database protocol. Therefore, HBN would have to convert the interfaces in Pharos to match the protocols in each design system. Bill talked about what they learned from their discussions with customers:

> It became increasingly clear that they required a number of specialized capabilities in order to fully adopt Pharos. By "adoption" we mean using Pharos as the primary tool for green product specification and selection. They could see - and often expressed great enthusiasm - that Pharos had the potential to be a useful product. But, in order to get there, Pharos would need to

develop as more of a “firm-based” tool than as one geared toward individual users, and would need to rapidly fill out its database with a much wider selection of building products. While a difficult reality, the message was, in fact, very promising for Pharos: “We really like it…now make it a product we can use every day.”

This experience significantly changed the team’s approach to the next phase of development, beginning in March 2010. It became clear to the team that in order to achieve their transformation goals, they would need to intensify their focus on understanding and meeting the needs of AEC firms. It also became apparent that a considerable amount of additional product tailoring would need to be undertaken in order to satisfy the needs of these demanding expert users. The level of personal engagement required to sell and install a system was also substantial. Finally, as HBN was gaining experience in working with building materials manufacturers to enter products into the Pharos database, they realized that, while there were increasing economies of scale as more products were entered, the level of effort required to build the database with the independent verification of each product would remain substantial on an ongoing basis.

Up until this point, the Pharos Project had been totally underwritten by HBN. It was, in fact, HBN’s main activity since 2006. The team evaluated what would be required to expand the existing HBN organization to support Pharos over the next 3-5 years. While the early development of Pharos was achieved within the existing HBN organization, there were significant gaps in the capabilities that would have to be filled quickly. The rate at which the existing staff could enter products into the Pharos database was inadequate to support what users needed to adopt Pharos as their everyday building product specification tool. The most pressing future needs, however, were sales, marketing and user support. There was little funding in the existing HBN budget for a marketing and sales campaign.

As to the question of whether they could get potential customers to pay for the data generated by Pharos, Bill stated:

> Although no one out there can provide what we do, there are some other choices for customers. Our competitors appear to be mostly self-funded, whether for-profit or not-for-profit. There is a distinction between the directories that list primarily manufacturer-provided data and those that have their own content generation and verification resources and provide analytical tools like us. The latter generally charge user fees. Both groups sometimes charge the building product manufacturers fees for listing their products, and almost always do so for other than a basic listing. However, there are several directories that are available completely for free, without evidence of a paid link to manufacturers or advertising. Those free sites investigated by us appear to have a limited focus on a specific set of products or geographic area.

Staying as a Nonprofit

Bill realized that he would have to change the organization to meet the resource needs to bring Pharos to the market. The two options he was considering were staying as a nonprofit or transitioning to a B-Corp. A reason Bill had doubts about using HBN to grow Pharos was the governance structure he had put into place. Bill commented, "My governance structure is coming back to haunt me." Bill mostly relied on one donor to provide the bulk of HBN's revenues. He was able to supplement that money with grants and smaller donations from others to generate revenue each year of between $750,000 and $1 million. Bill, therefore, did not have to exert the normal amount of effort into fundraising that a typical nonprofit would. HBN did not, in fact, have a full-time development person on staff. This reliance on one main donor also allowed Bill to keep a small nonvoting board as opposed to the typical large nonprofit board.

The bulk of HBN's money was put into funding Pharos, with a 2010 anticipated budget of $600,000 for Pharos. The learning from the initial discussions with potential customers of Pharos was that it was unlikely that user fees for Pharos would be able to make a significant financial contribution before several more years of development had taken place. Bill talked about the funding challenge:

> We determined in discussions with existing funders that they were not going to increase their levels of funding for Pharos. We have significant concern about funding if HBN is not able to develop a plan to expand funding sources for Pharos.

Bill hired a consultant to run some numbers on what HBN could expect if they continued to fund the Pharos project at its current levels. (See exhibit 2.) The assumption was that current employees would continue to work part-time on Pharos in addition to their policy advocacy work. The expectation was that Pharos would only be able to generate $500,000 in user fees in 2015 if they did not have a quicker ramp up in R&D and marketing resources. To remedy this, Bill would have to put much more effort into fund raising, change the structure of his board, and start to build and manage an organization.

Possible Transition to a Benefit Corporation

If Bill believed that Pharos would eventually become self-sustaining from fees, even if it took a couple of years to achieve, then he had another option in being able to raise the needed money to fund Pharos' further development. It was to become a Benefit Corporation, or B-Corp, and to raise money from a new group: socially responsible investors. Socially responsible investors invested in companies that addressed social and environmental problems. They still sought a return on their investments but were more patient than traditional investors. The socially responsible investing (SRI) movement had grown over the past 30 years to represent nearly 10% of U.S. assets under management, or roughly $2.3

trillion in 2010. SRI had evolved in both public and private markets, giving rise to a distinct venture capital industry of funds and individual investors seeking values-aligned investment opportunities.

In order to support SRI investors, in 2007 B Lab, a 501(c)(3) nonprofit organization, initiated a certification system for companies interested in distinguishing themselves as really being socially responsible. B Lab developed a set of transparent, comprehensive and comparable standards designed to enable the marketplace to identify and support companies that met rigorous third-party standards for social and environmental performance. These companies, however, still faced a possible legal risk, which led to the development of Benefit Corporations.

A Benefit Corporation was a for-profit corporate entity that differed from a regular corporation in that it also had an obligation to create a positive impact on society or the environment. In a regular corporation, the board of directors had a fiduciary responsibility to maximize financial gains for shareholders and was subject to shareholder suits if it did not, as corporate law required. There were three major provisions in Benefit Corporation legislation.[5] These provisions addressed corporate purpose, accountability and transparency, and stated that a Benefit Corporation had:

1) a corporate purpose to create a material positive impact on society and the environment;
2) expanded fiduciary duties of directors, which require consideration of non-financial interests;
3) an obligation to report on its overall social and environmental performance as assessed against a comprehensive, credible, independent and transparent third-party standard.

This would protect a mission-driven company, one that wanted to do "good" in addition to doing "well."

Although talked about nationally for several years, Maryland had become the first state in the US to legalize B-Corps in 2010. HBN, therefore, would not have to move far to become a B-Corp.

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[5] Clark, W.H. & Vranka, L. (2013). *The need and rationale for the benefit corporation.* Benefit Corp Information Center.

Although Bill found the concept of a B-Corp interesting, and there seemed a groundswell of companies wanting to operate under this structure, he was not sure of the concept as the laws allowing B-Corps were still evolving. His lawyer instincts made him skeptical. Also, Bill was still not convinced he wanted to raise money from investors and to be managed by a voting board of directors. What was most challenging to Bill was what Jay Coen Gilbert, the founder of B Lab, liked to say, "The first rule of sustainability is you have to be alive. You have to build the business." So if Bill were to take this route, he would have to act like a growth venture entrepreneur.

Conclusion

Bill was faced with at least three options. He could create a B-Corp to raise money from investors in order to more quickly scale the Pharos Project. He already had an encouraging overture from one SRI investor who seemed empathetic to Bill's vision and mission. Though there were many upsides, a crucial downside was that an outside investor, no matter how empathetic, would mean a significant change in the autonomous decision making that Bill had enjoyed. Fundamentally, Bill wondered whether he was the right person to run such a company. The second option was to put his nonprofit on a new growth trajectory by more proactively seeking out funding so that he could build the organization. The third option was to stay as is and continue to subsidize Pharos from HBN's general fund. Bill's best forecast was that Pharos would become more self-sustaining with time. The downside was whether this approach would create as big of an impact as the other two. Bill had a tough decision as he summed up his feelings, "I have spent my career trying to improve the environment. It has been my passion. Pharos, I believe, is the right approach to make a big difference. How do I make the biggest impact with Pharos while still taking advantage of my capabilities?"

General Directories

McGraw Hill Construction SWEETS
Reed Construction Data FirstSource.com
Construction Sciences Research Foundation, Inc.
AEC Daily (SpecSource.com)
BPM Select
4specs.com

Green-Focused Directories

Pharos
CSI GreenFormat
GreenSpec
GreenWizard
Oikos
WNC Green Building Directory
Sustainable ABC
EcoBusinessLinks
GreenBuildingAlliance
BuilditGreen
Green Building Pages
Underwriter Laboratories (UL)
Database of Validated and Certified Products
Greener Product
Cradle to Cradle Products Innovation Institute
GIGABASE (China)

Exhibit 1: Companies That Sell Building Product Specification Directories

Pharos Pro Forma P & L	2011	2012	2013	2014	2015
Revenue	$267,823	$329,640	$399,696	$481,825	$540,041
Expenses					
Sales, Marketing, Support	116,505	117,156	123,014	123,014	116,863
R&D	319,516	351,467	369,041	369,041	350,589
Administrative	215,659	229,584	238,815	242,289	239,717
Rent & Utilities	39,801	40,995	42,225	43,492	44,797
Conferences & Travel	43,690	45,001	46,351	47,741	49,173
Professional Services	130,000	133,900	137,917	142,055	146,316
Total Expenses	855,171	918,103	957,362	967,631	947,455
Net Income	(587,348)	(588,463)	(557,666)	(458,806)	(407,414)

Exhibit 2: Pharos Pro Forma P & L, 2011-2015

Assumptions:

1. Consulting revenues of $250,000 a year from architecture firms.

2. Target 6 potential customers in 2010. Grow to 15-20 adoptions by 2015.