



## Episode Title: What Is Product Stewardship's Value to a Company? -- A Conversation with Tina N. Armstrong, Ph.D.

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**Lynn L. Bergeson (LLB):** Hello, and welcome to All Things Chemical, a podcast produced by Bergeson & Campbell, P.C. (B&C<sup>®</sup>) a Washington, D.C., law firm focusing on chemical law, business, and litigation matters. I'm Lynn Bergeson.

This week, I was thrilled to sit down with Dr. Tina Armstrong, a Vice President with Arcadis U.S. Inc, to discuss the role of product stewardship in business organizations today. To those of us in this space, Tina is a total rock star. In addition to her role as a business leader and scientist at Arcadis, Tina is a professor in product stewardship strategy and management at the Indiana University Richard M. Fairbanks School of Public Health, is the author of many books and articles on product stewardship, and the 2022 recipient of the prestigious Allan K. Fleeger Distinguished Service Award conferred by the Product Stewardship Society. She received this award for her many, many contributions to product stewardship. We discuss what product stewardship is, its origins, its value to companies, particularly those in the chemical and chemical product manufacturing sectors, and the essential elements of a product stewardship team. Now, here's my conversation with Dr. Armstrong.

Tina, I am so thrilled that you are here today. I've been looking forward to our conversation for literally months.

**Tina N. Armstrong (TNA):** Thanks so much, Lynn. I'm delighted to be here today. This is a great program, and I'm glad to contribute when I can.

**LLB:** Thank you. Let's get right into it. Accolades embarrass you, but you are a Professor at the Indiana University Fairbanks School of Public Health, where you teach product stewardship strategy and management. You are a Vice President at Arcadis, a business leader and scientist. You are a Ph.D. in Marine Estuarine and Environmental Science. You have accolades and credentials behind your name like few people have. How did you get to this point? And tell us a little bit about your career and your many, many different steps along the way.

**TNA:** Actually, this is kind of a funny story, Lynn. I actually sat down at a conference with a colleague not too long ago, and we were counting up the number of distinct careers we've had. I ended up having seven different careers post-graduate school.

**LLB:** Oh my.

**TNA:** Yes, it's been a lot. A lot of different things. Common themes, but very different. I held a one-year Fellowship at the National Oceanic and Atmospheric Administration, focused on science policy right out of graduate school. Then I became an Ecological Risk Assessor and Environmental Remediation Project Manager at an aviation company. Then I came back to Arcadis and became an Environmental Remediation Consultant. I've been an Adjunct Professor, a Product Steward, and now most recently I'm a Director of Sustainability. The consistent theme, though, has been about making the world a better place for people today and in the future. That's really what I enjoy doing and I hope to continue doing throughout the rest of my career, no matter exactly what my title is, going down the line. It doesn't really matter what I'm doing, as long as I'm focused on that goal.

**LLB:** You do your job superbly, Tina. I know for the folks entering the field or transitioning to new fields, hearing career paths as interesting and diverse as yours is always rewarding. Let's talk a little bit about product stewardship, a topic that I think way too much about. Why should our listeners, many of whom are in the chemical product or chemical manufacturing sectors, think about product stewardship really as an essential -- and I do mean that term literally -- as an *essential* element of corporate operations?

**TNA:** That's a great question, Lynn. Product stewardship really represents the license to operate for a business that's manufacturing anything, be it chemicals or articles. Product stewardship really is all about getting products to market at a minimum in a regulatorily compliant manner, while at the same time building in environmental health, safety, and regulatory concerns during the new product development process. At its best, product stewardship provides a competitive advantage to companies by helping well-designed products get to market more quickly and cost effectively and building in added-value product attributes that help future-proof the product and increase sales. Really, at the end of the day, it is essential for good business strategy.

**LLB:** That's definitely aligned with my own thinking. I've looked at -- we have here at the firm, for example, a very large Listserv -- and over the last five, six years there have been many more names populated with the title Product Steward. And I know that is certainly not a recent development, but it has been evolving over a period of years. Maybe you can just give our listeners a little historical background on the evolution of the concept of product stewardship and, in your view, Tina, where it stands today.

**TNA:** Excellent. Product stewardship is -- it's got a fascinating history. It's really a multidisciplinary field that has its roots in science, politics, and business. In the late 1800s to early 1900s, U.S. laws began to require compensation for workers' injuries. As a result, large companies, particularly in the railroad and steel industries, began to establish safety organizations. In 1911, many of you are going to have heard about the Triangle Shirtwaist Factory fire in New York City that resulted in 146 workers dying. And that led to a wave of protests, strikes, and debate around labor rights and employer obligations. Several pieces of legislation were passed after that tragedy that resulted in increased worker safety in particular industries. Not long after, industrial hygiene itself became recognized as a discipline. As awareness of occupational diseases grew and societal expectations changed around employer obligations, large companies in the chemical industry began establishing

internal occupational exposure limits in the 1960s. Also in the early 1960s, the book *Silent Spring* by Rachel Carson confronted chemical companies about the safety of DDT, a widely used pesticide, and its publication was a milestone in the growth of the modern environmental movement. After its publication, the Stockholm Convention under the U.N. [United Nations] was created to regulate pesticides, and several of today's largest environmental [non-governmental organizations] NGOs got their start at about the same time.

The Sixties was really a watershed moment, and a number of other major ideas came forward out of the sixties. One of those was the idea that consumers should have certain rights regarding the products that they use. That came out of Ralph Nader's publication *Unsafe at Any Speed, the Designed-In Dangers of the American Automobile*. Not long after that publication, the Consumer Product Safety Act (CPSA) was passed in the United States. Not only was the CPSA passed, a number of other key pieces of legislation designed to address environmental issues were also passed in the 1970s. This included things like the Clean Air Act, the Occupational Safety and Health Act, the Clean Water Act, the Endangered Species Act, and of course, product stewards' favorite: the Toxic Substances Control Act (TSCA). If you fast-forward to today, from these key pieces of legislation, there have been a large increase in the number of regulations affecting products, and those regulations have become more globalized, for example, around chemical registration and hazard communication.

Product stewardship, which in its earlier years had more closely resembled product safety and industrial hygiene, now encompasses a product's whole life cycle. Product stewards are looking beyond manufacturing and use to end of life, as well as at packaging, transportation, and distribution, making product stewardship much broader than it was originally. With the transition to consider a product's whole life cycle, product stewardship is morphing really into product sustainability, looking at environmental health, safety, and regulatory considerations as foundational elements and also bringing in aspects of environmental, social, and economic benefits throughout the product's life cycle.

**LLB:** Wow! You have condensed about 10,000 pages of history, Tina, into maybe two succinct minutes. That was great. That was totally awesome.

**TNA:** Thank you.

**LLB:** What's interesting to me is, through the evolution of all of these regulatory milestones and enhanced awareness of ecological consequences of products in the environment, is the terminology that you've used. To me, product stewardship is a very big tent, and it includes concepts like circularity, which is a very big deal today, and more so now than it was even five years ago. And sustainability. To your point about morphing into product sustainability, is product stewardship kind of above it all? Or inclusive of sustainability, circularity, environmental justice, and all of the big, hot-button issues that we're talking about today?

**TNA:** The way I think about it right now is that environmental, social, and governance (ESG) issues include product stewardship. Product stewardship has touches on environmental; it touches on social; and it touches on governance. It's one of the many components of ESG. I think, especially as we have adjusted how we view our emissions, too, in particular with respect to greenhouse gases, our Scope 3 emissions now consider things like the product's manufacturing, use, and end-of-life stages. Emissions from the products that we're making are now being included in Scope 3 emissions calculations at the corporate level. It really -- product stewardship is feeding into the whole ESG sustainability overarching umbrella.

**LLB:** Super helpful. As Past President of the Product Stewardship Society, the society that awarded you most recently, Tina, the very prestigious Allan K. Fleeger Distinguished Service Award for your many, many, many contributions to the art, the science, and the regulatory confines of product stewardship, I have in my capacity as Past President and as a lawyer today practicing in the product space -- I preach the gospel of product stewardship all the time because I believe in it. I think it is an absolutely fundamental aspect of business operations today. And yet, even to this day, I have encountered a -- what I call a muted dismissiveness that product stewardship is more an aspiration than it is a discipline. Now, I push back on that because I think, given your -- what you said a moment ago about it's really a constellation of multiple disciplines, all working in unison to ensure that the production, use, and end of life of a product are sustainable, safe, and good for all of us. What do you say to that? That it's an aspiration versus a discipline?

**TNA:** Well, first, thank you for pushing back on it. I appreciate that. I think product stewardship somewhat reminds me of the way environmental science was treated in the early 1990s. It was almost impossible to get a degree in environmental sciences back then. It was considered an interdisciplinary study, and I think product stewardship is sort of on the same track. It's an interdisciplinary study that draws on many different disciplines beneath it. In the end, it's going to become its own discipline. But for those companies -- when we're talking about aspiration versus discipline, it's true that in some companies, product stewardship is treated only as an aspiration. But that doesn't acknowledge the fact that product stewardship definitely is a discipline, and certainly an evolving one, but without evolution, disciplines become stale and purely academic. All disciplines contain some element of aspiration to them. For example, medicine aspires to cure diseases. Astronomers aspire to explore distant galaxies, but that doesn't make them any less real or relevant or less of a discipline. Personally, in my view, companies that consider product stewardship as only an aspiration and not as a key element in their license to operate aren't likely to survive in the modern, globally regulated space that we live in in the long run.

**LLB:** I happen to agree with that view. Glad we're aligned, Tina.

**TNA:** Excellent.

**LLB:** How baked in is the expectation that product stewardship core competencies at a corporate level are presumptively part of a best-in-class business approach to corporate compliance? That is definitely my view, that you really need to have these core competencies at the corporate level to be best in class, but I don't know if that is widely shared in the community.

**TNA:** It's definitely true, Lynn. Product stewardship core competencies are completely expected to be part of a best-in-class business approach to corporate compliance. And corporate compliance extends to the products a company produces, and it falls squarely in the realm of product stewardship's core elements, things like product regulatory compliance and hazard communication. It's clearly a key element in corporate compliance. You can't do corporate compliance without all of the building blocks of product stewardship.

**LLB:** Today, my sense is that companies are challenged as never before to achieve -- to set targets, demonstrably achievable goals -- to demonstrate diminished emissions, or achieve, say, for example, zero waste, or otherwise set and achieve targets by which boards, shareholders, the public, their employees, and the community at large -- to which they are responsible and accountable. The public is challenged to assess the integrity of these commitments. Everybody sets them. You see them in websites, you see them in corporate

positions of social responsibility. How do you go about counseling your clients at Arcadis and the students that you educate in setting targets, and what tools are available to achieve them?

**TNA:** This is a question I get a lot, from students and clients. I think it's really important for targets to be transparent, realistic, and if possible, independently verified. A lot of companies set targets that are virtually impossible to understand because they pack so many details into them, or the targets are purely made up pie in the sky. And many consumers and investors have really caught on to the fact that targets that are too good to be true or are full of technobabble don't have any substance behind them and are demanding that companies provide evidence of transition plans, or backup material, that show how a company intends to reach the targets it sets, in a concrete and implementable fashion, particularly in the greenhouse gas emission space, where companies are setting net zero targets left and right. And the terminology can be often confusing, particularly to people who are not steeped in net zero greenhouse gas emissions accounting.

It's really critical to follow industry-specific target-setting guidelines and to have your targets verified independently by third parties, like the Science-Based Targets initiative (SBTi). For products, consumers are becoming increasingly savvy about green marketing claims and greenwashing, and they're demanding more and more information about the products they buy. So again, transparency is the key to credibility in terms of setting targets and making claims, especially around products and product sustainability.

**LLB:** That's good counsel, Tina. In your view, should these be reviewed periodically? And is there a certain corporate cadence that you're comfortable with?

**TNA:** Absolutely. Especially with the changing societal expectations and the rapidity with which regulations around this space are changing, especially around green claims, it's really important that you're up to date both on the regulatory aspects, so you understand are your claims in compliance, but that also are your claims in line with what your consumers are expecting them to look like? Do they contain enough information for them to make informed decisions? And what kind of feedback are you getting from your customer base? I really would recommend looking at claims on a periodic basis, definitely five years or less, to make sure that they are in line with expectations. But every two to three years would be what I would personally recommend to different clients.

**LLB:** Let's zero in on a question that I get from time to time, and I would much prefer just bucking them to you, Tina, because of your superior understanding of this space. And that is, what does a corporate product stewardship management organization look like? And this is size agnostic. We're not talking about a Fortune 50 company. It could be just a company that really wants to do well, do good, and do no harm. What are the essential elements, in your view, of a successful team?

**TNA:** This is a really good question, and we spend quite a bit of time on this one when we have students in product stewardship because so many people have challenges around envisioning what this looks like. Corporate product stewardship organizations -- and this is in part because corporate product stewardship organizations vary quite a bit from company to company, depending on the industry and the origins of the particular product stewardship group in that exact organization. There are two basic schools of thought on how product stewardship should be organized.

The first is a centralized model, where product stewardship sits outside of the individual businesses or business lines. And in centralized organizations, the product stewardship function can either act as a service to the business or as more of a governance and compliance function.

The second model we often see is that product stewardship is decentralized, with product stewards sitting within individual businesses or business lines. And this model really fosters a deep product understanding within the product stewardship function, but can lead to some disconnections if there are multiple businesses or business lines that are all operating independent of one another from a product stewardship perspective. But no matter where product stewardship sits within an organization, the essential elements of a successful team include a clear mission and objectives connected with your organization's vision and strategy; definitely senior leadership, support, and direction; a mix of the right technical skills to support the business -- for example, having both hazard communication and regulatory skills within the product stewardship organization -- and last, the appropriate tools necessary to function. So for example, [safety data sheet] SDS authoring software, or regulatory monitoring software, or a just a good plain old spreadsheet program.

**LLB:** I wanted to just ask you one question on the centralized organizational approach. Does the conflation of having both a kind of advisory and helpful role and also kind of an implicit compliance and enforcement role, does that cause any disarray with that approach? Or is it very much whatever the type of approach you use has to be best suited for your kind of organizational culture? Do you have any thoughts on that?

**TNA:** Yes, there is definitely some tension that can be created when a product stewardship organization doesn't know if it's acting more as a service or more as a governance and compliance function. And that can really cause challenges because the business doesn't know whether or not they need to follow the instructions from the centralized product stewardship group. They may consider them as suggestions or recommendations when in fact they are a compliance element. So that can really create some tension if the organization is not clear to the rest of the business what its role is.

It's possible to have multiple hats in product stewardship, so some components are more service oriented. For example, responding to -- helping respond to customer inquiries -- that would be a service function. But then in a centralized group, you might want to have all of your hazard communications centralized, and that is regulatorily required, so that is definitely a governance and compliance aspect. And the product stewardship organization itself needs to be very clear with *its* customers, the business, which functions are services and which are governance and compliance. Otherwise, there is the likelihood of crossed signals happening when something is a compliance thing and the business thinks it's a service or a suggestion.

**LLB:** It sounds like in all cases, role clarity is essential.

**TNA:** Absolutely.

**LLB:** What is your role? What lane are you swimming in? Right?

**TNA:** Absolutely. That's often one of the first things I do with an organization when they come in and say, "We have a dysfunctional product stewardship team." I sit down and I say, "Let's make some diagrams and see where the swim lanes are and who's doing what in your organization."

**LLB:** I bet that helps an awful lot.

**TNA:** I hope so.

**LLB:** One thing I know I get questioned on from time to time, and that is the ongoing need for management in some instances to be persuaded that product stewardship really does save money. It's not just risk avoidance. By being a really state-of-the-art product steward, you can actually save money. Is that still the case or is the prevailing view now that nope, the jury has decided, it's rendered its opinion, the debate is over, and it definitely saves money?

**TNA:** I wish the jury had decided that way, but I think the jury is still out. The answer really depends on the company's culture. In some organizations, non-revenue-generating functions, no matter what they are, have to justify their existence continuously by demonstrating organizational cost savings. And that's product stewardship, or it's accounts payable, or it's any other internal function that's not actively manufacturing. On the other hand, you have some organizations that really do value product stewardship and understand the value that product stewardship brings to the product and recognize that value explicitly. In either case, making the business case for product stewardship is definitely a skill all product stewards should have in their toolkit, because you never know exactly what you're going to be faced with in the organization where you're working.

**LLB:** In that regard, Tina, you may recall a couple of years back at the annual Product Stewardship meeting, we actually had some role-playing exercises. If you're a product steward and you're looking for either enhanced resourcing in your department, or more staff people, because as you noted a few seconds ago, this area is becoming just extraordinarily dense with regulatory challenges globally, trends in environmental compliance and safety, so staying on top of this, especially if you're a multinational, as most of our clients are, it's challenging, so you're always looking for more. We had actual role playing to help equip our product stewards with the tools they need to do exactly as you suggest, making the business case for product stewardship and the assets and the resources necessary to have a really excellent, effective team.

If you're a smaller business -- and I know sometimes there is a presumption that if you're smaller and nimble and perhaps startup or you haven't been along around for decades -- there's a presumption that you may not be as competent in staffing and managing a product stewardship team. But let's say you are a small business, you are deeply committed to stewardship. What do you recommend in terms of staffing and some relatively manageable, inexpensive management tools?

**TNA:** The key in a smaller business really is flexibility. A good generalist product steward equipped with a spreadsheet program can handle many of the needs for a smaller business. This can even be a part-time person in quality or sustainability, and I've seen it done that way. For example, there are ways to author single safety data sheets using a commercially available software on a per-SDS basis without actually having to commit to buying SDS authoring software itself. And there are also a variety of product stewardship related newsletters and free trial subscriptions to regulatory monitoring websites that can be used to support keeping up to date with product compliance. There are a lot of free resources out there that you can tap into as a small organization, as long as you have a strong generalist product steward who understands where to look and be able to flex to meet the needs of the company and its products.

**LLB:** I'm mindful of what you said a few moments ago in your introductory remarks, that product stewardship is morphing into product sustainability. With that as background, where do you see the profession five years from now?

**TNA:** I think in five years that product stewardship will have expanded beyond its traditional areas to encompass more aspects of sustainability, with product sustainability being increasingly considered within the realm of ESG topics in an organization, as we discussed earlier. Especially in light of the increasing prevalence of reporting Scope 3 greenhouse gas emissions that include processing, use, and end-of-life treatment of sold products, product stewardship and sustainability are becoming more and more intertwined, and circularity is becoming a key concept for many people and many organizations. Life cycle assessment is fast becoming a skill for product stewards in high demand, and I definitely think we'll see more and more product stewards with this skill and experience in the next five years. Companies really will need to understand the circularity aspects of their products, as well as other sustainability considerations.

**LLB:** I completely agree with that. That circularity, that term, you see it in so many contexts now, much more than even a couple of years ago. And in no small part, I'm sure, because of the European push to circular economies and sustainability, chemical sustainability. It's just one of many different factors, I'm sure, accounting for that. Where do you see product stewardship and chemical management overlap the most, assuming they do at all? And I think you would agree they do.

**TNA:** Yes, they absolutely do overlap, and in fact, there's quite a bit of overlap between chemical management and product stewardship, especially when it comes to the fundamentals of evaluating hazard exposure and risk. Many of the methods used to evaluate chemical risk have been adapted to address other types of physical risks in the product stewardship space. Product stewardship, though, goes a bit beyond chemical management in that it expands risk evaluation to non-chemical risks. Things like radiation and physical hazards, that you might not consider in traditional chemical management -- and depending on what company we're speaking about, chemical management can have more of a compliance-oriented or reactive focus associated with things like inventory checks and hazard communication creation and distribution, and transport and storage, with less focus on building environmental health, safety, and regulatory considerations into the chemical product development process. But on the other hand, some chemical companies are incredibly proactive with chemical management and consider the full life cycle of their products in their management programs. Similarly, companies' product stewardship programs can range from a compliance focus to a more holistic life cycle approach.

**LLB:** Maybe you can help us understand what some of the lessons chemical managers can learn from product stewards.

**TNA:** There are a number of them, and they go both ways, I think. It's important for product stewards to learn from other disciplines, as well as it is for chemical managers to learn from product stewards. But because product stewardship touches on so many different aspects of a company's products, effective product stewards have had to learn strong communication and influencing skills to get their jobs done. Communication and influencing skills can really support chemical managers' effectiveness too, particularly when it comes to conveying information about the hazards of their chemicals and trying to influence behavior for safe handling of those chemicals. Product stewards are also increasingly being asked to consider the broader picture of impacts associated with their products. To keep up with customer demands and societal expectations, chemical managers are going to also need to



see beyond the traditional chemical safety aspects, to be able to respond to the types of questions we expect to see from more educated and aware employees and other stakeholders.

**LLB:** Last question, Tina, and that is, where might our listeners find additional information both about the services that you offer at Arcadis and perhaps some of the more seminal works that you either authored or coauthored that might be of help to entities starting up a product stewardship program or honing their skills in that department, or just generally looking to find out more about this fabulous, expanding area called product stewardship?

**TNA:** There are fantastic resources out there, Lynn, about product stewardship, in particular on the Product Stewardship Society's website. They offer a whole host of webinars, some free, some paid. They also have publications, including things like the *Professional Practices of Product Stewardship*. They have another book called *Realizing the Full Business Value of Product Stewardship*, which is also pretty useful for more advanced practitioners, and they have resources related to taking your Certified Professional Product Steward (CPPS) exam as well. I would start there. That's a great place to begin. And if folks are interested in hearing about Arcadis's product stewardship capabilities, they're welcome to reach out to me directly, or our website also has additional information.

**LLB:** Excellent. Thank you, Tina. And I want to put a plug in for not only looking at the website of the Product Stewardship Society, since both Tina and I are deeply engaged in the society, but also to become a member of the Product Stewardship Society. I think it's really good value for money, and the programs, the products, the annual meeting are all fabulous opportunities to learn more about product stewardship, hone your skills, and connect with other members of the community, because it really is a community of product stewards that I think we all enjoy each other's company and learn an awful lot from each other.

**TNA:** That is absolutely true. And I want to emphasize, too, the annual meetings of the Product Stewardship Society draw people from all different kinds of disciplines. So don't feel like you have to have Product Steward in your title to attend the conference. We bring in all kinds of different people who join us and bring unique perspectives, all focused on products. It's a fantastic opportunity to network and broaden your horizons.

**LLB:** Great point, Tina, and thank you for joining us today. Thank you for your eloquence and your contributions to product stewardship. We all owe you a great deal. Thanks for being here.

**TNA:** Thanks so much, Lynn.

**LLB:** My thanks again to Dr. Armstrong for speaking with me today about product stewardship and what product stewardship means as an essential organizational component in business today.

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