

Program Description

Online Master of Science in Product Stewardship To Be Offered by Indiana University at IUPUI

(Date Submitted: 02/2016)

1. Characteristics of the Program

- a. Campus(es) Offering Program: Indiana University-Purdue University Indianapolis
- b. Scope of Delivery (Specific Sites or Statewide): Site Specific
- c. Mode of Delivery (Classroom, Blended, or Online): Online
- d. Other Delivery Aspects (Co-ops, Internships, Clinicals, Practica, etc.): N/A
- e. Academic Unit(s) Offering Program: Department of Environmental Health Science at the Fairbanks School of Public Health at IUPUI
- f. Anticipated starting semester: Fall 2016

2. Rationale for the Program

a. Institutional Rationale (Alignment with Institutional Mission and Strengths)

Program Summary

The IU Fairbanks School of Public Health (FSPH) at IUPUI is proposing a new Master of Science in Product Stewardship. Product stewardship is the “responsible management of the health, safety, and environmental aspects of raw materials, intermediate, and consumer products throughout their life cycle and across the value chain in order to prevent or minimize negative impacts and maximize value”.¹ Product stewardship is an emerging and evolving profession which addresses local, national, and global issues relating to the environment, worker health and safety, and social accountability as they relate to the design, use and disposal of everyday products. The entirely online, 30 credit Master of Science degree in Product Stewardship will train future leaders in this field with the following proposed curriculum:

- 6 credits of public health fundamentals
- 9 credits of environmental health science fundamentals
- 15 credits of specialized product stewardship (PS) coursework

¹ Product Stewardship Society. (2014). *Core Competencies for the Product Stewardship Professional*. Retrieved from <http://www.productstewards.org/Resources/Pages/Core-Competencies.aspx>.

Demand for Program

In a world of rapidly evolving consumer values, society is demanding that products are not only high quality, but environmentally sustainable, safe and healthy for workers and consumers, and socially responsible. As indicated by The Conference Board, a non-profit business membership and research association, there is a trend of increased societal demand on corporations for improved responsibility regarding the products they produce. In their recent report describing the role of product stewardship within a company, The Conference Board highlighted product stewardship as a “business critical driver with potential to impact the very core of an organization.”² Accordingly, the product stewardship profession is growing and evolving to meet this societal demand. Traditional environmental and occupational health and safety professionals are being tapped within their organizations to fill these product stewardship roles, but with little opportunity for formal training, there is a disparity between what employers are seeking and what academia is currently providing.

The Product Stewardship Society (PSS) was formed in 2013 to give these professionals an organizing body and voice. The PSS has described the product stewardship profession as comprised of “individuals ...from a variety of educational backgrounds” [typically the environmental health sciences] who “receive in-house training provided by their company or attend third-party technical workshops to bolster their product stewardship expertise.”³ Product stewards are currently limited to this type of ad-hoc training because formal educational training in product stewardship through an academic institution is essentially nonexistent. Dr. Steven Lacey, department chair of Environmental Health Science and the program director for the proposed M.S., was on the inaugural board of directors for the Product Stewardship Society, and noted the limited educational opportunities currently available to product stewards.

The FSPH at IUPUI aims to fill this knowledge gap and will be the first academic institution in the U.S. to offer a graduate degree in this emerging field. The FSPH faculty see this new degree as an opportunity to corner the market in academic training for the product stewardship profession, while establishing a signature program for the school and the university. Furthermore, initial discussions with industry partners such as DuPont, ExxonMobil, 3M, Eli Lilly, and many more have indicated that the demand for this program exists. Industry response to societal demand, the advent of the PSS, demand for this type of education, and the founding of the new FSPH have provided impeccable timing to allow IU to meet this need. Moreover, the FSPH Department of Environmental Health Science’s strong ties with industry, including adjunct faculty who are currently working in, or recently retired from, high-level product stewardship positions at Fortune 500 companies, assures that students will receive content and skills that are aligned with specific needs of the workforce.

² The Conference Board, Inc. (2013). *Council Perspectives, Insights from The Conference Board Product Stewardship and Regulatory Affairs Council. Building an Effective Product Stewardship and Regulatory Affairs Organization*. Council Perspective CP-044. January 2013. Available at <http://www.conference-board.org/publications/topics/publicationdetail.cfm?publicationid=2413>.

³ Product Stewardship Society. (2014). *Core Competencies for the Product Stewardship Professional*. Retrieved from <http://www.productstewards.org/Resources/Pages/Core-Competencies.aspx>.

Mission Alignment

This program is well-aligned with the mission of the FSPH, whose purpose is to “cultivate innovative, interdisciplinary, community engaged education, research and service and prepare leaders in public health and health care.” Product Stewardship is a field that, at its core, requires multidisciplinary knowledge and as a product steward, graduates will be looked to as leaders in product responsibility at their organization. This degree program will position the FSPH as an innovator in teaching in this area, with emerging plans for a program of research.

This program also supports the mission of the Department of Environmental Health Science at the FSPH, which aims to “intervene before people get sick or injured...through a framework of anticipation, recognition, evaluation and control of natural and human-made exposures to physical, chemical, biological, and psychosocial hazards.” The goal of the Product Stewardship program is to produce graduates who responsibly manage the health, safety and environmental aspects of consumer products to minimize negative impacts and maximize value; thus our graduates – with solid foundations in environmental health science – will be prepared to take on leadership roles in product stewardship, helping businesses navigate an increasingly complex regulatory environment while simultaneously working to protect people and the environment.

Strategic Alignment

This initiative has the full support of the FSPH faculty and dean and addresses several major objectives established in the FSPH Strategic Map (see Appendix 1):

- *Deliver a Portfolio of Outstanding Educational Programs – Prepare students for evolving public health and health care fields; Define and implement signature programs; Increase public health courses taken by all IUPUI students; Implement and disseminate innovative educational delivery methods.*

The M.S. in Product Stewardship will use an online format for delivery, focused on accessing a previously underserved professional audience in the U.S. and abroad. This degree will serve as the first of its kind in the country, establishing a signature program for the FSPH. The curriculum is workforce-aligned, thus focused marketing and the strong job market awaiting the program’s graduates will attract students to IUPUI.

- *Develop and Implement a Distinctive Research Agenda - Prioritize and create centers of excellence.*

This degree plan is the first step in an ongoing goal to create partnerships with programs from within IUPUI and external institutions. The long term goal is to apply for a National Science Foundation Science and Technology Center: Integrative Partnerships⁴ award or similar opportunity.

- *Build Partnerships to Improve Population Health - Establish mutual partnerships with key leaders impacting health.*

Our partnership with industry in developing this curriculum ensures strong alignment with their needs. Thus, upon graduating, our students will be well-positioned for leadership positions in product stewardship at some of the country’s largest and most influential companies. This means that their efforts to promote worker health and environmental stewardship along the entire supply chain at these major, multinational organizations has

⁴ <http://www.nsf.gov/pubs/2014/nsf14600/nsf14600.pdf>

the potential to affect millions of consumers in the US and abroad, as well as protect the environment for future generations.

- *Expand and Diversify Financial Resources - Achieve targeted enrollment growth and tuition revenue.*

Because this degree is the first of its kind, the FSPH has the potential to establish itself as the premier degree program in product stewardship education. This degree will attract students to the program that were previously not engaged with IUPUI or the FSPH. We anticipate steady growth in enrollment in this degree and because of our initial efforts in planning and scaling this program, capital investment in the program is small.

Outlook and Opportunities for Graduates

Completing this program will prepare students to enter the workforce with knowledge and skills to help companies design and manage consumer and industrial products throughout the life of a product, in order to minimize risk and maximize economic benefit. Graduates will possess a knowledge base and skillset that is specialized enough to make them immediately impactful in any product stewardship position, yet generalized enough across industries that there will be a wide array of opportunities available to them. Furthermore, because formal academic training in this field is very limited, new graduates will have a strong advantage in the job market for product stewardship positions and other related jobs. The FSPH faculty relationships with industry partners and the Product Stewardship Society will ensure that networks are in place to secure jobs for graduates of this program.

We anticipate that many of our students will be working professionals already active in the product stewardship field; thus the M.S. in Product Stewardship will also serve as a way to formally build skills that enable them to move up in their PS organization or to move into a PS organization from another division within their company.

Strengths of the Institution

The FSPH has already laid the groundwork for an M.S. in Product Stewardship. In the fall of 2014, the school launched the Fundamentals of Product Stewardship course, with adjunct faculty member Mr. Gail Hart (recently retired ExxonMobil product stewardship executive), through the Public Health Training Center at FSPH. During the spring of 2015, the school convened a planning team of product stewardship faculty, comprised of industry professionals from Dupont, ExxonMobil, and Johnson & Johnson, along with existing departmental faculty. Furthermore, Dr. Steven Lacey, and Gail Hart, adjunct faculty, will serve as editors for what is to be the flagship publication for product stewardship professionals, *Professional Practices of Product Stewardship*, under the auspices of the Product Stewardship Society. Thus, with their expertise in hand, the M.S. degree curriculum was shaped to include skills and practical knowledge that are currently in demand by the product stewardship profession. In the fall of 2015 and spring of 2016, the school offered three additional product stewardship courses: Regulatory Affairs for Product Stewardship; Product Improvement and Sustainability; and Product Hazard, Exposure and Risk Assessment; all online. The remaining course, Product Stewardship Strategy and Management, will be offered online in fall 2016. These courses have already been through the course remonstrance process and/or are currently in the approval process and will comprise the 15 credit “product stewardship” core of the degree program.

The public health and environmental health science core comprise the other 15 credits of the degree. These courses are taught by full-time faculty and are developed, approved, and currently being delivered either online or face-to-face. Fundamentals of Public Health and Fundamentals of Epidemiology (required by the Council on Education for Public Health), are currently available online. Courses in Environmental Toxicology, Environmental Health Risk Assessment, and Occupational Health, Safety & Environmental Management Systems will be offered online in fall 2016 and spring 2017.

The practical experience of the full-time and part-time faculty members who will teach the course content is one of the major strengths of this program. The three part-time faculty members who will be teaching the specific product stewardship coursework are all current or retired product stewardship executives at multinational corporations. Steve Benoit is the Corporate Manager for Product Stewardship at DuPont; Gail Hart was the former Manager of Global Product Stewardship Services for ExxonMobil; Al Ianuzzi is the Senior Director of Environment, Health, Safety and Sustainability at Johnson & Johnson; and Bob Skoglund, who will serve in a support and advisory capacity, is the Director of Product Safety and Regulatory Affairs for Covestro (formerly Bayer Material Science). The new faculty, in collaboration with the Center for Teaching and Learning at IUPUI, have dedicated themselves to learning the most current pedagogical techniques in online delivery of content, ensuring continuous improvement in the development of learning outcomes and assessment techniques, innovative approaches to teaching, and effective delivery of online course content.

Student Population to be Served

This M.S. degree will serve a diverse body of students, comprised of both current students at FSPH and working professionals across the country and the globe.

IUPUI students: The population to be served will include graduate students with strong interests in environmental health science with specific interests in the reduction of environmental, health and safety impacts of product lifecycles. As the program gains traction, the school will recruit more students from undergraduate programs both within the school and across the IUPUI campus who are preparing for careers in product stewardship, environmental health and safety, or related disciplines.

Working professionals: Initially, approximately 40% of the students in this program will likely be professionals currently working in the field of product stewardship or a related discipline. The program is designed to be highly accessible for working professionals (courses offered online and in the evenings), and students can take up to four courses at a time, if they would like to finish the degree in 16 months. Many of the larger companies are committed to sponsoring their employees for formal product stewardship education and we expect the share of working professionals to grow and eventually comprise the majority of our students. We have already established connections with several large, global companies (most notably 3M and Dupont), which will give us continued access to students at a national and global extent.

See Appendix 1: Institutional Rationale for additional detail

b. State Rationale

State priorities as laid out in the *Reaching Higher, Achieving More* plan calls for a higher education system that is student-centered, mission-driven, and workforce-aligned. The online M.S. in Product Stewardship will achieve each of these three aims in the following ways:

Student centered: Our goal is to attract students from Indiana, the U.S., and globally. The online delivery mode of this degree allows for flexibility in a student's schedule and each of the courses will be offered in the evening so that working professionals can enroll in this M.S. program without disrupting their work schedule. The longer term goal is to accommodate the needs of a global student body, thus course availability will be as flexible as possible. To date, we have two students enrolled from Colgate-Palmolive and Reliance Technology Group in Mumbai, India, and have responded to inquiries from several others around the globe.

Mission driven: The IUPUI Strategic Plan outlines 10 initiatives that will continue to "advance and transform our institution."⁵ The M.S. in Product Stewardship will promote many of these priorities including increasing capacity for graduate education by offering a new one-of-a-kind graduate degree, transforming online education through improved access and opportunities for learners, optimizing enrollment management by expanding our reach and increasing degree attainment, and leveraging our strength in health and life sciences. Many of these priorities align with those previously described in the FSPH Strategic Map. The Fairbanks School of Public Health will leverage its existing core public health content, while making it more accessible to working professionals and adult learners through a virtual classroom. This will give students access to a unique graduate degree which, based on extensive research, is currently not offered anywhere else in the world.

Workforce-aligned: The M.S. in Product Stewardship is an excellent example of a workforce-aligned degree. According to the Indiana Career Council's Report to the Indiana Legislative Council, many businesses lack in-house training and rely on academic institutions to fill the knowledge gap. These businesses are looking to academia to create post-baccalaureate programs geared toward specific industry topics.⁶ The M.S. in Product Stewardship will accomplish this objective because the curriculum was developed with input from industry representatives and the product stewardship course content will be taught by professionals currently or recently retired from high-level product stewardship positions at Fortune 500 companies. This ensures alignment with industry needs in key skills and knowledge areas. We estimate that initial enrollment by students already within the Environmental Health Science department will comprise about 60% of the PS classes and since more than two-thirds of IUPUI graduates remain in Indiana to work⁷, this degree will bring vital skills and knowledge to Indiana companies.

The M.S. in Product Stewardship will develop students' communication and leadership skills as well. In the Indiana Business Council's 2012 Skills Survey, the following three skills were described by Indiana business owners as most important for success in one's career: "critical

⁵ IUPUI. (2013). *Renewing Our Commitment: Planning for a Dynamic Future* (2013 Performance Report). Retrieved from http://www.iupui.edu/docs/about/2013_Perf_Report.pdf.

⁶ Indiana Career Council. (2013). *Progress Report to the Indiana Legislative Council*. Indianapolis, Indiana. Retrieved from http://www.in.gov/icc/files/Indiana_Career_Council_Progress_Report-Final.pdf.

⁷ IUPUI. (2008) *40 Years: From Idea to Impact* (2008 IUPUI Performance Report). Retrieved from http://www.iupui.edu/docs/about/2008_Perf_Report.pdf.

thinking/problem solving, oral communication, [and] professionalism/work ethic.”⁸ The product stewardship curriculum will cultivate these skills within the coursework by relying on group discussion, case studies, and semester long projects related to the student’s existing job, or desired job. This means that current professionals will learn through solving a current problem at work and future professionals will get practice at solving “real-world” issues. Furthermore, the diverse mix of young and experienced professionals across an array of industries, as well as traditional students, will encourage cross-pollination of ideas and networking by professionals across the fields of chemical, oil and gas, pharmaceuticals, and more.

c. Evidence of Labor Market Need

i. National, State, or Regional Need

This program will primarily serve a national labor market need, with tremendous opportunity globally. However with the solid manufacturing presence in Indiana, there is great potential to provide product stewards for Hoosier employers.

This profession represents a cross-cutting discipline with needs for product stewards in every major manufacturing sector including oil and gas, petrochemicals, chemical manufacturing, consumer goods, pharmaceuticals, aerospace, automotive, and many more. In their recent report describing the role of product stewardship within a company, The Conference Board highlighted product stewardship as a “business critical driver with potential to impact the very core of an organization.”⁹ Accordingly, companies such as 3M, Dupont, ExxonMobil, Eli Lilly, and many others have all launched formal Product Stewardship divisions within their companies, and have expressed interest in sending their employees to our Product Stewardship graduate program.

ii. Preparation for Graduate Programs or Other Benefits

This program will primarily prepare students at the graduate level for entry into the labor market in the field of product stewardship or other related fields. The Master of Science program could also be used as a stepping stone to a doctoral program in related fields.

iii. Summary of Indiana DWD and/or U.S. Department of Labor Data

Due to the emerging nature of this profession, there are no employment profiles listed in the Bureau of Labor Statistics directly associated with product stewardship; however, there are at least seven occupational profiles related to the skillset and knowledge that will be acquired through the M.S. in Product Stewardship. These occupational profiles can be roughly categorized into occupational health and safety jobs, environmental science and engineering jobs, and compliance or regulatory occupations. These job categories are broad, but the skillsets and knowledgebase required for these careers has

⁸ Indiana Business Council. (2012). 2012 Skills Survey: A report about perceptions of skills of college graduates and the current workforce. Retrieved from http://www.indianabusinesscouncil.com/IBC_2012_Skills_Survey.pdf

⁹ The Conference Board, Inc. (2013). *Council Perspectives, Insights from The Conference Board Product Stewardship and Regulatory Affairs Council. Building an Effective Product Stewardship and Regulatory Affairs Organization.* Council Perspective CP-044. January 2013. Available at <http://www.conference-board.org/publications/topics/publicationdetail.cfm?publicationid=2413>.

significant overlap with the product stewardship profession. Average annual salaries in the U.S. in 2014 for these job categories ranged from \$45,910 for Environmental Scientist Technicians to \$86,340 for Environmental Engineers and from \$41,700 to \$81,560 for those same categories in Indiana (Appendix 2, Tables 1 and 2). Many of these job categories will see double digit job growth in the next several years, with Health and Safety Engineers, Environmental Engineers, and Environmental Health Scientists seeing a national growth of almost 15% by 2022. Based on an initial survey of salaries posted on job boards, salaries for product stewardship graduates are expected to exceed the average salaries of these related job categories.

*See Appendix 2: **Summary of Indiana Department of Workforce Development and/or U.S. Department of Labor Data** for additional detail.*

iv. National, State, or Regional Studies

- A study conducted in 2009 by Siemens and McGraw Hill (follow-up to a 2006 study) surveyed large companies to assess trends in their sustainability practices. From 2006 to 2009 the number of firms engaged in “sustainable activities” doubled. By 2009, 61% of firms reported having a person on staff entirely dedicated to sustainability and companies confirmed that environmental and community concerns are being incorporated into strategic business decisions. More than half of the firms surveyed reported that they were providing green products and services to the market as well as requesting sustainability information from vendors along their supply chain¹⁰. This translates to an increasing number of jobs in the product stewardship profession.
- The Conference Board, a non-profit business membership and research association, released a report in 2013 which described product stewardship as a “business critical driver with potential to impact the very core of an organization.”¹¹
- The Product Stewardship Society, in its white paper entitled the “Core Competencies for the Product Stewardship Professional” described the employment outlook this way: “Industry professionals tend to agree that we have seen steady growth in the profession worldwide and that this growth is expected to continue.”

*See Appendix 3: **National, State, or Regional Studies** for additional detail.*

v. Surveys of Employers or Students and Analyses of Job Postings

Product stewardship is an emerging field, thus job positions are not uniformly categorized. With this in mind, job searches on the major job boards including Monster, Indeed, SimplyHired, and LinkedIn indicate that there is demand for Product Stewards and other, highly related positions. On average, in the U.S., there are currently about 75 positions listed with the specific term “Product Steward” or “Product Stewardship” in their title (See Appendix 4 for Summary Table). However, the identity of the product stewardship

¹⁰ Siemens & McGraw Hill. (2009). 2009 Greening of Corporate America, The pathway to sustainability – from strategy to action. Retrieved from http://construction.com/market_research/FreeReport/GreeningCorpAmerica/2009_GreeningCorpAmerica.pdf

¹¹ The Conference Board, Inc. (2013). *Council Perspectives* (see foot note 7).

profession is still evolving, thus many related job functions and titles actually embody the knowledge and job functions of a product steward.

These job descriptions, often categorized under “Regulatory Compliance Specialist” or “Industrial Hygienist”, add thousands of job opportunities to the pool of available jobs for graduates. Industrial hygienists are professionals that “protect and enhance the health and safety of people at work and in their communities” (American Board of Industrial Hygiene) and represents a highly related and overlapping job category. This statement is supported by conversations with professionals at the American Industrial Hygiene Association Conference and Exposition, in which many environmental, occupational health and safety specialists actually self-identified as product stewardship professionals. It was evident from these discussions that product stewards actually represent a much larger portion of the jobs within many organizations than traditional industrial hygiene positions. For example, at ExxonMobil, industrial hygienists represent about 40 job positions in the global organization, but product stewardship jobs comprise more than 150 jobs in that company¹². Additionally, the International Council of Chemical Associations outlined the following business divisions as those that would support product stewardship positions.¹³

- *Purchasing and product sourcing;*
- *Research & Development;*
- *Manufacturing;*
- *Marketing and sales;*
- *Packaging, storage and loading;*
- *Transportation and delivery;*
- *Customer service;*
- *Distributors;*
- *Contractors;*
- *Re-use, recycling and product disposal;*

As more companies are ‘going green’ the demand for these positions will grow. The transition to established Product Stewardship divisions at many corporations is underway, thus we can expect official “Product Steward” job listings to expand rapidly in the coming years.

See Appendix 4: Surveys of Employers or Students and Analyses of Job Postings for additional detail.

vi. Letters of Support

See Appendix 5 for Letters of Support.

Included in this proposal are letters of support for the IUPUI online M.S. in Product Stewardship. These letters represent support from Eli Lilly and Co, the American Industrial

¹² Gail Hart, personal communication, May 18, 2015.

¹³ International Council of Chemical Associations. (2007). Product Stewardship Guidelines. Retrieved from <http://www.icca-chem.org/ICCADocs/Product%20Stewardship%20Guidelines%20-%20Final.doc>.

Hygienist's Association (the parent organization of the Product Stewardship Society), and the Dean of the Fairbanks School of Public Health at IUPUI.

Letters are provided by:

- **Darin Moody, Vice President of Global Engineering and Health, Safety and Environment, Eli Lilly and Company.** Citing the strength of our curriculum and alignment with Lilly's own Product Stewardship Standard, Mr. Moody has indicated Lilly's support of the program by providing opportunities for interns and graduates, and connecting existing employees with our coursework through continuing education opportunities.
- **Peter O'Neil, Executive Director of the American Industrial Hygiene Association.** AIHA is a professional society representing over 10,000 environmental, health and safety professionals, including the affiliate Product Stewardship Society. Mr. O'Neil expects his members to have a "high degree of interest" in the Product Stewardship degree and believes that a degree program is necessary to meet the evolving challenges of this profession.
- **Paul Halverson, Professor and Founding Dean of the IU Fairbanks School of Public Health.** This letter indicates the support of the Dean for the program, faculty and proposal. Dr. Halverson sees this as a signature program for the school and believes that the program is well-aligned with the priorities of the FSPH. He is committed to providing the infrastructure including offices, administrative space, and technical support, as necessary, for the successful delivery of the degree.

3. Cost of and Support for the Program

a. Costs

i. Faculty and Staff

There are currently four full-time faculty members and four part-time faculty members in place. Additional full-time faculty members will be hired as program enrollment grows.

In addition, administrative and marketing/communication staff are available to support this program.

*See Appendix 6: **Faculty and Staff** for additional detail.*

ii. Facilities

This program will not have an effect on existing facilities or require new capital projects.

*See Appendix 7: **Facilities** for additional detail.*

iii. Other Capital Costs (e.g. Equipment)

This program will not require the purchase of equipment. The infrastructure needed to offer this program exists within the school and campus.

*See Appendix 8: **Other Capital Costs** for additional detail.*

b. Support

i. Nature of Support (New, Existing, or Reallocated)

There has been no reallocation of resources to support this program. Funding for any future additional faculty will come from increased tuition revenues as the program grows.

No programs have been eliminated or downsized to accommodate this new degree.

ii. Special Fees above Baseline Tuition

There will not be any special fees above baseline tuition to support this program. Since the courses will be offered via live video, no additional fees will be charged by the IU Office of Online Education.

4. Similar and Related Programs

a. List of Programs and Degrees Conferred

i. Similar Programs at Other Institutions

There is no equivalent graduate degree program in the country; however, there are some related training or certificate programs, primarily focused on life cycle assessment (LCA) and sustainability. Note that LCA and sustainability studies represent components of product stewardship practice, but do not encompass the larger framework of the product stewardship profession that our program will deliver. The LCA and sustainability programs are as follows:

- Iowa State University offers a 15-hour Life Cycle Assessment Fundamentals professional development course.
- The Massachusetts Institute of Technology offers a short program in energy sustainability and LCA.
- The Presidio Graduate School in San Francisco offers a certificate in Sustainable Management.
- The University of Washington offers a certificate in Green Chemistry and Chemical Stewardship.
- Arizona State University has an online Master of Sustainability Leadership (MSL) degree and an Executive Master of Sustainability Leadership (EMSL) degree

ii. Related Programs at the Proposing Institution

A degree at IUPUI that represents one component of product stewardship is the Supply Chain Management track in the Kelley School of Business MBA program. This specialty track, as part of the MBA, focuses on management and operations processes within the supply chain. The Kelley School offers an online Master of Science in Global Supply Chain Management, as well. Supply chain management is an important aspect of product stewardship, but this business school program differs from the proposed program in that it does not specifically focus on the social, health, or environmental impacts of products as established within the product stewardship framework. Dr. Paul Halverson, the Dean of the School of Public Health has discussed the proposal for a new M.S. in Product Stewardship with the Dr. Phil Cochran, the Dean of the Kelley School of Business, and the Kelley School faculty are interested in potential collaboration in the future.

b. List of Similar Programs Outside Indiana

There are a few existing programs within the Midwest Higher Exchange Compact states that are related to the Product Stewardship field. The Erb Institute at the University of Michigan offers an on-campus dual degree plan (MS/MBA) with a sustainability focus and the University of Wisconsin-Extension office offers an online Master of Science in Sustainable Management through a collaborative effort of five of the University of Wisconsin regional campuses (Green Bay, Oshkosh, Parkside, Stout, and Superior). These programs appear to address sustainability as it is broadly defined, and do not specifically focus on products.

c. Articulation of Associate/Baccalaureate Programs

N/A

*See Appendix 9: **Articulation of Associate/Baccalaureate Programs** for additional detail.*

d. Collaboration with Similar or Related Programs on Other Campuses

There are currently no collaborative arrangements with any programs on other campuses.

5. Quality and Other Aspects of the Program

a. Credit Hours Required/Time To Completion

The Master of Science in Product Stewardship is 30 credit hours and will take a full-time student 16 months to complete. This degree requires 6 credit hours of fundamental public health coursework, 9 credit hours of environmental health science fundamentals, and 15 credit hours of coursework specific to the field of product stewardship. The purpose of this degree is to give experienced and early career professionals a foundation of public health and environmental/occupational health fundamentals which can then be applied to responsible management throughout the life of a product.

See Appendix 10: Credit Hours Required/Time to Completion for additional detail.

b. Exceeding the Standard Expectation of Credit Hours

N/A – this is not an associate or baccalaureate degree.

See Appendix 11: Exceeding the Standard Expectation of Credit Hours for additional detail.

c. Program Competencies or Learning Outcomes

As laid out in IUPUI's Principles of Graduate and Professional Learning, students will master the knowledge and skills set forth in the product stewardship program competencies, be able to communicate effectively with peers, clientele, and the public, think creatively and critically to improve practice in the field of product stewardship, and behave in an ethical manner both professionally and personally. The specific competencies for the M.S. in Product Stewardship are as follows:

Product Stewardship Competencies

1. Describe the core functions, values and principles of environmental and occupational public health.
2. Identify and characterize product hazards, exposures, and risk through inherent product characteristics, uses, and misuses of products.
3. Select and apply appropriate frameworks to analyze product risks to humans and the environment throughout product supply chains and product lifecycles.
4. Identify and evaluate current and emerging societal issues, regulatory requirements, and voluntary frameworks that may affect products throughout their lifecycle.
5. Assess and apply best practices to improve product sustainability and competitive advantage while minimizing business risk through management and product development.
6. Identify and recommend strategies to improve the capabilities of product stewardship organizations within the larger business construct.

d. Assessment

The success of the program will ultimately be assessed for: 1) meeting its goals of preparing students for successful careers as product stewards in any professional environment, 2) providing flexible and innovative delivery of content, 3) expanding and diversifying financial resources for the FSPH through enrollment growth, and 4) supplying our state's employers and beyond with well-trained, workforce-aligned graduates.

The primary assessment of student preparation will be through the mastery of the Master of Science in Product Stewardship Degree Competencies. The table below describes how each course will provide learning opportunities and assessment of the six PS competencies and how they relate to the IUPUI Principles of Graduate and Professional Learning. Information gathered through the assessment process will be used to help determine the summative effectiveness of the program in meeting its intended learning outcomes and to

inform any adjustments that are determined to be needed to help with continuous programmatic improvement.

Table 1. Description of the course learning opportunities, assessment of the PS competencies, and relationship to the IUPUI Principles of Graduate and Professional Learning.

Competency	Learning Opportunities	Evaluation Opportunities	Relationship to Principles of Graduate and Professional Learning
Describe the core functions, values, and principles of environmental and occupational public health.	<ul style="list-style-type: none"> • Fundamentals of Public Health • E517: Fundamentals of Epidemiology • A661: Environmental & Occupational Toxicology • A662: Environmental Health Risk Assessment • A623: Environmental Management Systems 	<ul style="list-style-type: none"> • Case studies • Semester project • Homework • Presentation 	<ul style="list-style-type: none"> • Communicating effectively to others in the field and to the general public • Behaving in an ethical way both professionally and personally
Identify and characterize product hazards, exposures, and risk through inherent product characteristics, uses, and misuses of products.	<ul style="list-style-type: none"> • A680: Fundamentals of Product Stewardship • A670: Product Hazard, Exposure & Risk Assessment 	<ul style="list-style-type: none"> • Case studies • Semester project • Homework • Presentation 	<ul style="list-style-type: none"> • Thinking critically, applying good judgment in professional and personal situations • Communicating effectively to others in the field and to the general public • Behaving in an ethical way both professionally and personally
Select and apply appropriate frameworks to analyze product risks to humans and the environment throughout product supply chains and product lifecycles.	<ul style="list-style-type: none"> • A670: Product Hazard, Exposure & Risk Assessment 	<ul style="list-style-type: none"> • Homework • Presentation 	<ul style="list-style-type: none"> • Thinking critically, applying good judgment in professional and personal situations • Communicating effectively to others in the field and to the general public • Behaving in an ethical way both professionally and personally
Identify and evaluate current and emerging societal issues, regulatory requirements, and voluntary frameworks that may affect products throughout their lifecycle.	<ul style="list-style-type: none"> • A680: Fundamentals of Product Stewardship • A670: Regulatory Affairs for Product Stewardship • A670: Product Stewardship Strategy & Management 	<ul style="list-style-type: none"> • Case studies • Semester project • Presentation 	<ul style="list-style-type: none"> • Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field • Thinking critically, applying good judgment in professional and personal situations • Communicating effectively to others in the field and to the general public • Behaving in an ethical way both professionally and personally

<p>Assess and apply best practices to improve product sustainability and competitive advantage while minimizing business risk through management and product development.</p>	<ul style="list-style-type: none"> • A680: Fundamentals of Product Stewardship • A670: Product Improvement & Sustainability 	<ul style="list-style-type: none"> • Case studies • Semester project • Presentation 	<ul style="list-style-type: none"> • Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field • Thinking critically, applying good judgment in professional and personal situations • Communicating effectively to others in the field and to the general public • Behaving in an ethical way both professionally and personally
<p>Identify & recommend strategies to improve the capabilities of product stewardship organizations within the larger business construct.</p>	<ul style="list-style-type: none"> • A670: Product Stewardship Strategy & Management 	<ul style="list-style-type: none"> • Final project • Case studies 	<ul style="list-style-type: none"> • Demonstrating mastery of the knowledge and skills expected for the degree and for professionalism and success in the field • Thinking critically, applying good judgment in professional and personal situations • Communicating effectively to others in the field and to the general public • Behaving in an ethical way both professionally and personally

The three remaining goals of providing flexible and innovative delivery of content, expanding and diversifying financial resources for the FSPH through enrollment growth, and supplying our state’s employers with well-trained, workforce-aligned graduates will be evaluated through a portfolio of quantitative and qualitative performance measures. These will be assessed on an annual basis and will be used to determine the success of the MS in product stewardship program. The measures will include, but are not limited to, the following:

- Applicant to Enrollee Ratio
- Number and Diversity of Active Students
- Student Perception of Flexibility of Program Design
- Student Performance in Required Courses
- Student Feedback through interviews and Course Evaluations
- Average Length of Time to Complete Degree
- Number of Graduates Per Year
- Employment Rate of Graduates
- Feedback from Employers of Graduates
- Feedback from Alumni

Table 2. Measures of Success of the MSPS Program: Student Enrollment, Delivery of Courses, and Work-force Alignment

Measure	Indicator	Assessment
Student enrollment	Applicant to enrollee ratio	Annual review
	Number and Diversity of Active students	Annual review
	Number of Graduates Per Year	Annual review
Delivery	Flexibility of Program Design	Annual review
	Student Performance in Required Courses	Annual review
	Student Feedback through interviews and course evaluations	Semester review
	Average Length of Time to Complete Degree	Annual review
Workforce Alignment	Feedback from Alumni	Survey every 3 years
	Employment Rate of Graduates	Annual survey
	Feedback from Employers of Graduates	Survey (including key informant interviews) every 3 years

All quantitative and qualitative information gathered will be reviewed by the Chair of the Environmental Health Science Department on an annual basis with review and advice from the Associate Dean for Education, as needed.

The program will be evaluated through a self-study and a program review process. The systematic five year program review will be conducted by an advisory board with members internal and external to IUPUI, and will examine the strengths and weaknesses of the program. The advisory board will produce a summary statement and recommendations to the program administrators.

e. Licensure and Certification

There is currently no license or certification to be earned at this time. However, the Product Stewardship Society (PSS) is in preliminary discussions with the American Board of Industrial Hygienists a credentialing body, about developing a professional certification in product stewardship. This curriculum, which was designed with input from board members from the PSS, will prepare students for professional certification if it is established in the future.

f. Placement of Graduates

Graduates will enter the workforce in entry or mid-level (based on previous experience) positions in product stewardship or related jobs in every major manufacturing sector including

oil and gas, petrochemicals, chemical manufacturing, consumer goods, pharmaceuticals, and others. Many students enrolled in this program will be existing professionals in product stewardship and a graduate degree in this discipline will allow these professionals to advance their position and salaries within their company. Positions that graduates will be qualified for include titles such as product steward, hazard communication specialist, regulatory compliance specialist, project manager, product safety manager, environmental health and safety specialist, and others. Additionally, the International Council of Chemical Associations outlined the following business divisions as those that support product stewardship positions.¹⁴

- *Purchasing and product sourcing;*
- *Research & Development;*
- *Manufacturing;*
- *Marketing and sales;*
- *Packaging, storage and loading;*
- *Transportation and delivery;*
- *Customer service;*
- *Distributors;*
- *Contractors;*
- *Re-use, recycling and product disposal;*

The Product Stewardship faculty and FSPH career development staff will assist in identifying and nurturing employment opportunities for students and graduates. The FSPH Director of Development, in cooperation with the IUPUI Office of Alumni Relations will track student occupational paths. The FSPH Office of Student Services annually tracks job placement rates and job categories of the school's graduates, which is required of accredited schools of public health.

g. Accreditation

The proposed program will meet the requirements of Indiana University, which is accredited by the Higher Learning Commission. There is currently no separate national accrediting body for Product Stewardship programs, as this is the first program of its kind. Since the program is within the School of Public Health, the Master of Science will be accredited by the Council on Education for Public Health (CEPH).

6. Projected Headcount and FTE Enrollments and Degrees Conferred

In the initial roll out of these classes, six students enrolled in the Fundamentals of Product Stewardship Course in fall 2014. This grew to 10 students in fall 2015 with an additional five students enrolled in the Regulatory Affairs for Product Stewardship course. There have been a total of 15 individual students enrolled in these courses over the past two years. Although this does not directly

¹⁴ International Council of Chemical Associations. (2007). Product Stewardship Guidelines. Retrieved from <http://www.icca-chem.org/ICCADocs/Product%20Stewardship%20Guidelines%20-%20Final.doc>.

translate to degree enrollment, this promising growth in course enrollment was used to estimate five-year program enrollment projections. The projected Year 1 enrollment headcount is 5 students (4 FTE). Steady growth over the next five years is projected to result in a headcount of 40 students (25 FTE) and a degree completion projection of 20 students by Year 5. The administration and faculty are committed to the growth of this program and has assembled a team within the School of Public Health, including the Director of Marketing and Communications and the Associate Dean for Global Health, to help communicate and promote this new opportunity to potential students.

NEW ACADEMIC DEGREE PROGRAM PROPOSAL SUMMARY

Institution/Location: Indiana University-Purdue University Indianapolis
Program: Master of Science in Product Stewardship
Proposed CIP Code: 30.0000
Base Budget Year: 2015-16

	Year 1 <u>2016-17</u>	Year 2 <u>2017-18</u>	Year 3 <u>2018-19</u>	Year 4 <u>2019-20</u>	Year 5 <u>2020-21</u>
Enrollment Projections (Headcount)					
Full-time Students	2	6	10	14	16
Part-time Students	<u>3</u>	<u>9</u>	<u>15</u>	<u>21</u>	<u>24</u>
	5	15	25	35	40
Enrollment Projections (FTE)					
Full-time Students	2	5	7	10	10
Part-time Students	<u>2</u>	<u>6</u>	<u>9</u>	<u>13</u>	<u>15</u>
	4	10	16	23	25
Degree Completion Projection	-	5	10	15	20

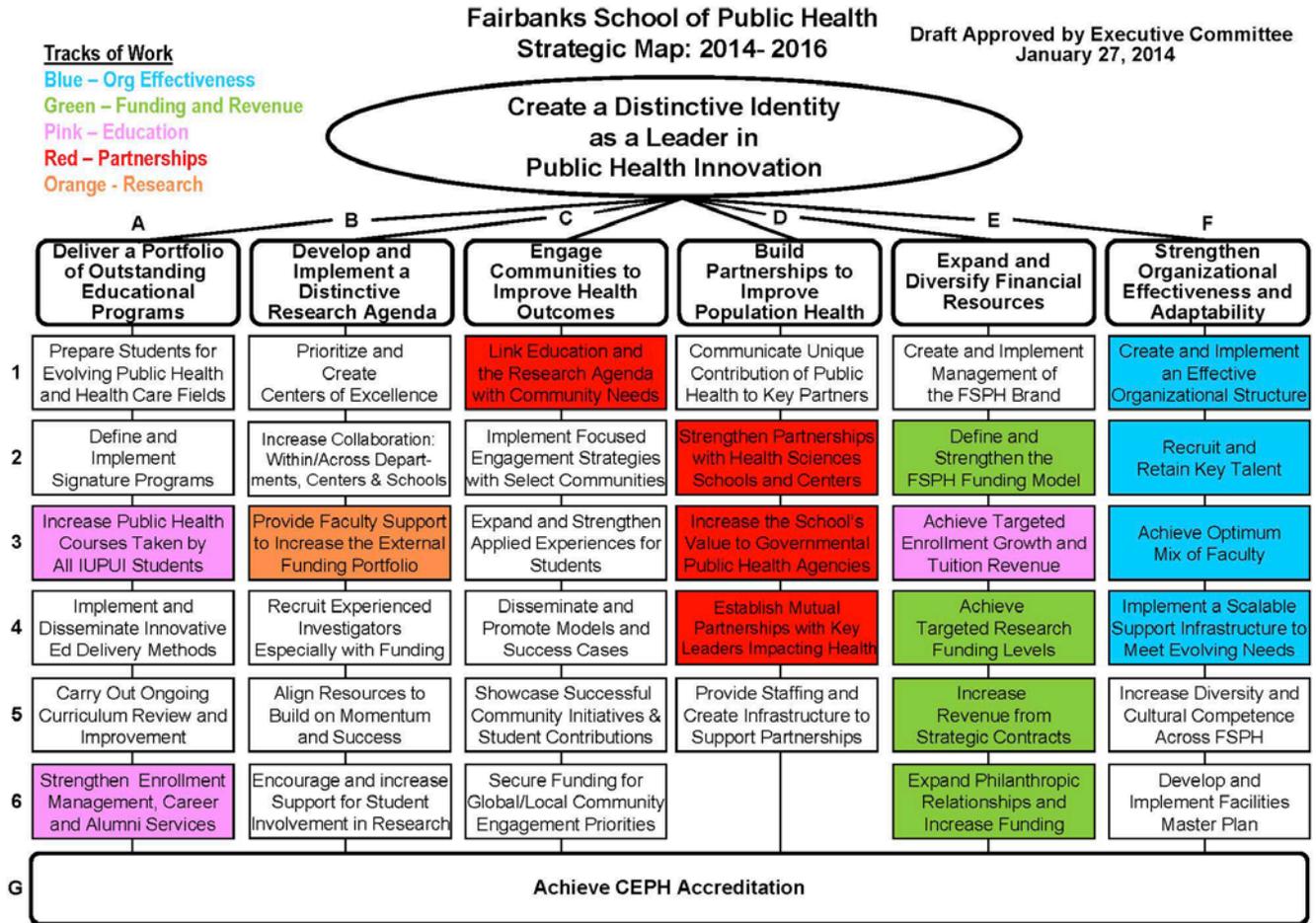
CHE Code:
 Campus Code:
 County Code:
 Degree Level:
 CIP Code:

Appendix 1: Institutional Rationale

IUPUI Core: Vision, Mission, Values & Diversity

IUPUI Principles of Graduate and Professional Learning

Fairbanks School of Public Health Strategic Map



Appendix 2: Summary of Indiana Department of Workforce Development and/or U.S. Department of Labor Data

Table 1. 2014 National Employment in Selected Product Stewardship Related Occupations

US DOL Code	Occupation	Employed	Average Annual U.S. Salary	Median Annual U.S. Salary
29-9011	Occupational Health and Safety Specialists	65,130	\$70,470	\$69,200
19-2041	Environmental Scientist and Specialist, including Health	88,740	\$72,050	\$66,200
13-1041.07	Regulatory Affairs Specialists or Compliance Officers (13-1041)	246,970	\$68,000	\$65,000

National Data Source: [Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections](http://www.onetonline.org/), accessed at <http://www.onetonline.org/>

Table 2. 2014 Indiana Employment in Selected Product Stewardship related Occupations

US DOL Code	Occupation	Employed	Average Annual Indiana Salary	Median Annual Indiana Salary
29-9011	Occupational Health and Safety Specialists	1,620	\$60,900	\$58,300
19-2041	Environmental Scientist and Specialist, including Health	840	\$55,740	\$48,800
13-1041.07	Regulatory Affairs Specialists or Compliance Officers (13-1041)	3330	\$69,600	\$56,100

State Data Source: [Indiana Department of Workforce Development, Strategic Research & Development Division](http://www.onetonline.org/), accessed at <http://www.onetonline.org/>

Table 3. U.S. and Indiana Employment Projections of Selected Product Stewardship Related Occupations.

Occupation	Occupational Health and Safety Specialists	Environmental Scientists and Specialists, including Health	Regulatory Affairs Specialists
DOL occupation code	29-9011	19-2041	13-1041.07
2012 U.S. employment	62,900	90,000	239,800
2022 U.S. employment	67,100	103,200	250,800
U.S. employment growth, 2012-2022	7%	15%	5%
2012 Indiana employment	1571	760	3330

2022 Indiana employment	1726	859	3640
Indiana employment growth, 2012-2022	10%	13%	9%
Median annual salary, U.S.	\$69,200	\$66,200	\$65,000

National Data Source: [Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections](#)

State Data Source: [Indiana Department of Workforce Development, Strategic Research & Development Division](#), accessed at <http://www.onetonline.org/>

Appendix 3: National, State, or Regional Studies

Siemens & McGraw Hill. (2009). 2009 Greening of Corporate America, The pathway to sustainability – from strategy to action. Retrieved from http://construction.com/market_research/FreeReport/GreeningCorpAmerica/2009_GreeningCorpAmerica.pdf

The Conference Board, Inc. (2013). *Council Perspectives, Insights from The Conference Board Product Stewardship and Regulatory Affairs Council. Building an Effective Product Stewardship and Regulatory Affairs Organization*. Council Perspective CP-044. January 2013. Available at <http://www.conference-board.org/publications/topics/publicationdetail.cfm?publicationid=2413>.

Product Stewardship Society. (2014). *Core Competencies for the Product Stewardship Professional*. Retrieved from <http://www.productstewards.org/Resources/Pages/Core-Competencies.aspx>.

Appendix 4: Surveys of Employers or Students and Analyses of Job Postings

Gail Hart, personal communication, May 18, 2015.

International Council of Chemical Associations. (2007). Product Stewardship Guidelines. Retrieved from <http://www.icca-chem.org/ICCADocs/Product%20Stewardship%20Guidelines%20-%20Final.doc>.

Table 4. Summary of job listings for product stewardship and related positions on several national job boards.

<i>Job Description</i>	<i>Monster</i>	<i>LinkedIn</i>	<i>Indeed</i>	<i>SimplyHired</i>	<i>Average of Job Search Sites</i>
<i>Product Stewardship</i>	28	~100	~50	~120	~75
<i>Regulatory Compliance Specialist</i>	~250	~2000	~2000	~1200	~1300
<i>Environmental Health and Safety/Industrial Hygienist</i>	~900	~500	~500	thousands	~2000 or more

Appendix 5: Letters of Support



October 20, 2015

Steven Lacey, Ph.D.
IU Fairbanks School of Public Health
714 N. Senate Ave
Indianapolis, IN 46202

Eli Lilly and Company

Lilly Corporate Center
Indianapolis, Indiana 46285
U.S.A.
+1.317.276.2000
www.lilly.com

RE: Proposed Master of Science in Product Stewardship

Dear Dr. Lacey,

I am writing to express my support for the proposed degree in Product Stewardship. Eli Lilly and Company is committed to advancing our health, safety and environmental performance across the product life cycle and we believe that sound product stewardship provides value to our customers, shareholders, and society. Lilly's Product Stewardship Standard, which is implemented across the entire value chain, covers everything from reducing the environmental impact of product manufacturing in discovery phase to assessing the risk of our products in the environment at the end of use.

The coursework covered in your degree plan reflects these same priorities. Graduates of your program will have a solid foundation in the broad range of aspects within product stewardship. They will have the necessary skills to successfully enter the workforce and align product stewardship goals with company missions and visions.

Demand for product stewards in the pharmaceutical sector continues to grow steadily. Many companies, including Eli Lilly, are involved in implementing a product stewardship standard. The complexity of supply chains continues to increase as multi-nationals partner with external research, manufacturing and transport companies around the globe. As a result, product stewardship opportunities increase.

Given the strength of the curriculum proposed, Lilly is supportive in it will provide opportunities such as hiring interns as part of our corporate program; hiring graduates based upon business need; and providing current employees access to high quality continuing education.

I appreciate the opportunity to advocate for this proposed degree. In closing, I want to reiterate Lilly's support of this degree proposal. I look forward to future discussions related to the creation of this area of study.

Sincerely yours,

W. Darin Moody
Vice President, Corporate Engineering and Global Health, Safety and Environment
Eli Lilly and Company



September 2, 2015

Steven E. Lacey, PhD, CIH, CSP
IU Fairbanks School of Public Health
714 N. Senate Avenue
Indianapolis, IN 46202

Dear Steven,

I am writing on behalf of the American Industrial Hygiene Association (AIHA) to express my enthusiastic support for the M.S. in Product Stewardship degree proposal. AIHA represents over 10,000 industrial hygiene professionals and is one of the largest international associations serving occupational and environmental health and safety professionals. As Executive Director of AIHA, I believe this degree will directly benefit our members and beyond.

Occupational health professionals within our organization have been increasingly asked to fill product stewardship roles within their companies. In response to this shift, and given the overlap between the industrial hygiene and product stewardship professions, the Product Stewardship Society was formed as an affiliate of AIHA in 2012. In 2014, the Product Stewardship Society released "Core Competencies for the Product Stewardship Professional" which describes the technical, regulatory and professional core competencies required for a successful product stewardship professional. Your curriculum, as designed, addresses all three of these pillars of product stewardship and the knowledge and skills obtained through your degree program should facilitate advancement of product stewards within their organizations and move this emerging profession forward.

As companies strive to keep up with the pace of regulatory change and evolving customer expectations, the product stewardship profession must expand to meet these demands. Educational institutions such as yours will be relied upon to train working professionals and new graduates in product stewardship skills and knowledge. I believe your program will provide real benefits to the health and safety community given the curriculum you have proposed, as well as the years of experience that your faculty will bring to the table. The online degree will be especially valuable to working professionals, and we are confident our members will have a high degree of interest in your program.

Sincerely,

Peter J. O'Neil, FASAE, CAE
Executive Director



**RICHARD M. FAIRBANKS
SCHOOL OF PUBLIC HEALTH**

INDIANA UNIVERSITY
IUPUI

December 3, 2015

Steven Lacey, Ph.D.
Department of Environmental Health Science
Indiana University Fairbanks School of Public Health
714 North Senate Avenue, EF 204
Indianapolis, IN 46202

Dear Dr. Lacey,

It is with much enthusiasm that I write to lend my support for the proposed online Master of Science degree in Product Stewardship. I see the proposed M.S. degree as a *signature* program for our school and I am excited about the opportunities this degree offers for reaching a new student population both domestically and abroad.

This degree plan specifically addresses several major objectives established in the Fairbanks School of Public Health strategic plan: prepare students for evolving public health and health care fields, implement and disseminate innovative educational delivery methods, establish mutual partnerships with key leaders impacting health, achieve targeted enrollment growth and tuition revenue, and prioritize and create centers of excellence.

The proposed M.S. also readily aligns with the mission of the Environmental Health Science department and will build upon existing coursework and expertise within the department. The full-time and part-time faculty which will support this degree have expertise in occupational and environmental health management, toxicology, risk assessment, and years of industry practice in Product Stewardship at several Fortune 500 companies. Thus, students will be exposed to both the theoretical underpinnings of environmental health science, while also receiving practical training from professionals working in the field of Product Stewardship.

In support of this degree, the School is committed to providing the infrastructure including offices, administrative space, and technical support as necessary for the successful delivery of this online degree.

Sincerely,

Paul K. Halverson, DrPH, MHSA
Professor and Founding Dean

Overlap with existing courses, degrees, or certificates

To the best of our knowledge none of the new courses overlap with existing IUPUI courses, degrees or certificates. As described, a degree at IUPUI that represents one component of product stewardship is the Supply Chain Management track in the Kelley School of Business MBA program. This specialty track, as part of the MBA, focuses on management and operations processes within the supply chain. The Kelley School offers an online Master of Science in Global Supply Chain Management, as well. Supply chain management is an important aspect of product stewardship, but this business school program differs from the proposed program in that it does not specifically focus on the social, health, or environmental impacts of products as established within the product stewardship framework. Dr. Paul Halverson, the Dean of the School of Public Health has discussed the proposal for a new M.S. in Product Stewardship with the Dr. Phil Cochran, the Dean of the Kelly School of Business, and the Kelly School faculty are interested in potential collaboration in the future.

Appendix 6: Faculty and Staff

Emily Ahonen, PhD – Full-time faculty

Dr. Ahonen is an Assistant Professor and full-time faculty in the Department of Environmental Health Science at FSPH and will teach Fundamentals of Public Health. Dr. Ahonen uses qualitative and mixed methods, usually applied in community-engaged settings. Her work is focused on occupational health and safety, especially of vulnerable worker groups, and on the organization of work and the psychosocial environment. Her work also involves evaluation of interventions, both to understand processes and to demonstrate outcomes in a variety of public health challenges. After earning an undergraduate degree at the University of Michigan and working in health promotion for several years, Dr. Ahonen received her PhD and MPH degrees from the Universitat Pompeu Fabra in Barcelona, Spain. She returned to the U.S. and completed a postdoctoral fellowship at the University of Illinois at Chicago School of Public Health.

Steve Benoit – Part-time faculty

Mr. Benoit is a part-time faculty member and will teach Product Hazard, Exposure and Risk Assessment. Steve Benoit has spent the last 15 years in a Product Stewardship role at the Dupont Chemical Company, where he is currently the Corporate Manager for Product Stewardship, Projects & Development at DuPont. Steve leads the global Product Stewardship & Regulatory Learning and Development program, the global Stewardship of Products & Regulations Implementation team (SPIRIT), the Brand Licensing Steering Team (BLST) and he manages the Collaboration Center for Product Stewardship (PS).

Indra Frank, MD, MPH – Part-time faculty

Dr. Frank is a part-time faculty member in the Department of Environmental Health Science at FSPH where she teaches Environmental & Occupational Toxicology. She is also the Environmental Health Project Director for the Hoosier Environmental Council, an Indiana leader in education and advocacy for environmental issues and policies. Dr. Frank was formerly a practicing board certified physician in pathology, laboratory medicine and hematopathology. She received her MD from The Johns Hopkins University School of Medicine and her Master of Public Health from the IU School of Medicine.

Gail Hart, MBA – Part-time faculty

Mr. Hart is a part-time faculty member and will teach Fundamentals of Product Stewardship, Regulatory Affairs for Product Stewardship, and Product Stewardship Strategy and Management. Gail Hart spent 38 years with ExxonMobil, rising through the ranks to Executive - Global Product Stewardship Services. Along the way, he held several product stewardship management positions, as well as a range of chemical plant manufacturing assignments, supervision of mechanical design, new business development and management of export/import operations. With his extensive industry experience and first-hand knowledge of real world expectations and challenges, Mr. Hart offers his students a unique opportunity to learn both theory and application. Mr. Hart holds a BS in Industrial Engineering from Iowa State University and an MBA from Rutgers University.

Al Ianuzzi, PhD – Part-time faculty

Dr. Al Ianuzzi is a part-time faculty member and will teach Product Improvement and Sustainability. He is the Senior Director of the worldwide Environment, Health & Safety department at Johnson & Johnson where he directs the global Product Stewardship and Green Marketing programs. He leads Johnson & Johnson's EARTHWARDS™ greener product design process, Healthy Future 2015 product stewardship sustainability goals, emerging issues and environmental toxicology programs. Al received his Ph.D. degree in Environmental Policy from the Union Institute & University in Cincinnati where he researched

EHS self-regulation programs. He is the author of the books; Greener Products: the Making & Marketing of Sustainable Brands (CRC Press 2011) and "Industry Self-Regulation and Voluntary Environmental Compliance" (CRC Press, 2002) and has written numerous articles on product stewardship and environmental compliance.

Steven Lacey, PhD – Full-time faculty

Dr. Lacey is an Associate Professor and full-time faculty in the Department of Environmental Health Science at FSPH and will teach Occupational Health, Safety & Environmental Management Systems. A Certified Industrial Hygienist and Certified Safety Professional, Dr. Lacey works to assess occupational and environmental exposures to inform control strategies. His research is focused on medical laser health and safety, including laser generated air contaminants. He is a board member of the Product Stewardship Society and President-elect of the American Industrial Hygienist Association. Dr. Lacey received his PhD in industrial hygiene from the University of Illinois at Chicago, and was a postdoctoral fellow at the Johns Hopkins University Bloomberg School of Public Health.

Shahid Parvez, PhD – Full-time faculty

Dr. Parvez is an assistant professor and full-time faculty of the Department of Environmental Health Science and currently teaches the Environmental Human Health Risk Assessment class. Dr. Parvez applies computational toxicology methods to inform human health risk assessment, focusing on chronic environmental exposures through drinking water and food contaminants. Prior to joining the faculty at FSPH, Dr. Parvez worked at the United States Environmental Protection Agency (EPA) in Cincinnati as an Oak Ridge Postdoctoral Fellow. He earned his PhD in Environmental Science and Engineering from the Indian Institute of Technology in Bombay.

Gregory Steele, DrPH, MPH – Full-time faculty

Dr. Steele is an Associate Professor of Epidemiology and will teach Fundamentals of Epidemiology. Dr. Steele is the MPH Epidemiology Concentration director and also teaches Historical Epidemiology and Public Health Surveillance Systems. He has served as the State Epidemiologist and Director of the Epidemiology Resource Center for the Indiana State Department of Health, and the Senior Epidemiologist for the Marion County Health Department. Dr. Steele also has experience in health assessments of environmental and occupational chemical exposures and community exposures to chemical warfare agents. His research interests include unintentional injuries, childhood obesity, and adverse health outcomes during pregnancy. Dr. Steele received his undergraduate training from Indiana University, and his Masters and Doctorate degrees from the School of Public Health, University of Alabama-Birmingham. He is a recipient of the Indiana University Trustee's Teaching Award for excellence in teaching and has been inducted into Delta Omega, the Public Health Honor Society.

Appendix 7: Facilities

There is no new instructional space required for this degree program.

Appendix 8: Other Capital Costs

No additional capital costs will be required for this degree program.

Appendix 9: Articulation of Associate/Baccalaureate Programs

N/A

Appendix 10: Credit Hours Required/Time to Completion

The M.S. in Product Stewardship is an entirely online 30 credit program with 6 credits of public health fundamentals, 9 credits of environmental health science fundamentals, and 15 credits of specialized product stewardship coursework. All courses listed below are required and a minimum GPA of 3.0 is mandatory to graduate. This program will take 16 months to complete, assuming full-time study.

Course Number	Fall of 1st Year	Credit Hours	Existing or New Course
A610	Environmental & Occupational Toxicology	3	Existing
P670	Fundamentals of Public Health	3	Existing
A680	Fundamentals of Product Stewardship	3	Existing
E517	Fundamentals of Epidemiology	3	Existing
	Spring of 1st Year		
A611	Human Health Risk Assessment	3	Existing
A623	Occupational Health, Safety & Environmental Management Systems	3	Existing
A670*	Product Improvement & Sustainability	3	Existing
	Fall of 2nd Year		
A670*	Product Hazard, Exposure & Risk Assessment	3	Existing
A670*	Regulatory Affairs for Product Stewardship**	3	Existing
A670*	Product Stewardship Strategy & Management**	3	New
	Total Number of Credit Hours	30	

**Temporary course numbers.*

Recommended CIP code

- 30.0000

The following course syllabi are for the two courses that are still pending in the course approval process.

******PENDING GAC APPROVAL******

**Indiana University Fairbanks School of Public Health
Department of Environmental Health Science
Fall 2015**

COURSE TITLE: Regulatory Affairs for Product Stewardship
COURSE NUMBER: PBHL - A675
DATE/TIME:
LOCATION: Hybrid

FACULTY: Gailen (Gail) A. Hart
908.399.9692 (Phone)
gailhart@iupui.edu
Consultation by appointment

COURSE DESCRIPTION

This course explores the major national and international legislative, regulatory, and voluntary frameworks that impact manufacturing, importing, and placing products into commerce, and aspects of compliance management for businesses. It examines landmark legislation and initiatives affecting major industry sectors, and best practices in anticipating and responding to emerging regulatory trends and issues.

MPH PROGRAM COMPETENCIES ADDRESSED IN THIS COURSE

1. Assess and recommend strategies that prevent and control environmental and occupational hazards to human health and safety.
2. Cultivate effective communication with diverse stakeholders on environmental and occupational health and safety issues.
3. Apply methods to analyze the effects of political, social and economic influences on public health systems at the individual, community, state, national and international levels.

ENVIRONMENTAL HEALTH CONCENTRATION COMPETENCIES ADDRESSED IN THIS COURSE

4. Apply a framework to anticipate, recognize, evaluate, prevent, and control environmental and occupational exposures that pose risks to human health and safety.
5. Select and apply appropriate risk assessment methods for environmental and occupational health and safety issues.
6. Assess and recommend prevention, control, and management strategies for environmental and occupational health and safety issues.
7. Cultivate effective communication with diverse stakeholders on environmental and occupational health and safety issues.

COURSE LEARNING OBJECTIVES

- Understand and apply the historical evolution of current PS regulations that is associated with issues of safety which are used for environmental and occupational health to be analyzed and determined if adequate or inadequate for the defined parameters.
- Recognize and associate key concepts in contemporary PS regulations, apply all important aspects of compliance, translate information into data, and manage that data for regulations surveillance.
- Evaluate the growing importance of emerging issues that are influencing the perception of product safety to determine if defined regulations are appropriately evaluated and applied. .
- Describe key legal concepts and their importance and the impact they have on compliance and due diligence of regulation policies.

REQUIRED COURSE MATERIALS

Reports and Articles

1. Legal Aspects of Product Stewardship Regulations
 - a. U.S.
 - i. *From Defect to Cause to Comparative Fault: Rethinking Some Product Liability Concepts*; Marquette Law Review, Volume 60, Issue 2 Winter 1977, <http://scholarship.law.marquette.edu/cgi/viewcontent.cgi?article=2164&context=mulr>
 - b. Europe
 - i. *A Guide to EU Standards and Conformity Assessment*, NIST Special Publication 951, May 2000, http://gsi.nist.gov/global/docs/EU_Std&CA_2000.pdf
 - ii. *Product liability in the European Union*, a report for the European Commission, February 2003, http://ec.europa.eu/enterprise/policies/single-market-goods/files/goods/docs/liability/studies/lovells-study_en.pdf
2. Product Regulatory Surveillance Process
3. Emerging Issues
 - a. *Practical Advice for Product Steward Professionals on Remaining Competent, Socially Aware, and Scientifically Proficient*; Lynn L. Bergeson, Charles L. Franklin, Robert W. Hamilton, and Joe W. (Chip) Pitts III; Bureau of National Affairs; 2012
 - b. Life Cycle of Emerging Issues
 - c. Best Practices for Identifying and Assessing
4. Extended Producer Requirements
 - a. EU Waste Electrical and Electronic Equipment (WEEE), http://ec.europa.eu/environment/waste/weee/index_en.htm
5. Buyer Requirements
 - a. Walmart, <http://corporate.walmart.com/global-responsibility/environment-sustainability/sustainability-index>
 - b. Tesco, <https://suppliermanual.tescois.com/Default.aspx>
 - c. P&G, http://www.pg.com/en_US/sustainability/overview/index.shtml
 - d. Kaiser Permanente, <http://share.kaiserpermanente.org/article/kaiser-permanente-launches-sustainability-scorecard-for-medical-products/>
6. 3rd Party Systems
 - a. Good Guide, <http://www.goodguide.com/>
 - b. The Sustainability Corporation, <http://www.sustainabilityconsortium.org/>
 - c. Environmental Working Group, <http://www.ewg.org/>
7. Engagement with Regulators
8. Product Defense / Advocacy
 - a. *Section 10. General Rules for Organizing for Legislative Advocacy*; Kansas University, <http://ctb.ku.edu/en/table-of-contents/advocacy/direct-action/legislative-advocacy/main>
 - b. *Determining a Lobbying Regulatory Model*; Association of Accredited Public Policy Advocates to the European Union, Christian On; 2015 02 19; <http://www.aalep.eu/determining-lobbying-regulatory-model>
 - c. *Product Defence: How industry money protects killer chemicals*; Hazards Magazine, Issue 103, July – September 2008; <http://www.hazards.org/workandhealth/spincycle.htm>
9. *The Toxic Substances Control Act: History and Implementation*; U.S. Environmental Protection Agency; <http://www.epa.gov/oppt/newchemicals/pubs/chem-pmn/appendix.pdf>
10. *An Overview of TSCA, its History and Key Underlying Assumptions, and its Place in Environmental Regulation*; David L. Markell, 2010 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1616674
11. *The Toxic Substances Control Act (TSCA): A Summary of the Act and Its Major Requirements*; Linda-Jo Schierow, April 1, 2013 <http://fas.org/sqp/crs/misc/RL31905.pdf>
12. *Amendment to the Toxic Substances Control Act to reauthorize and modernize that Act, and for other purposes*, Udall Vitter Congressional Bill 2015 03 10 http://www.khlaw.com/webfiles/Udall_Vitter_Bill_2015_03_10.pdf

13. REACH Legislation; European Chemicals Agency - review the following links and all their sub-elements
 - a. <http://echa.europa.eu/regulations/reach>
 - b. <http://echa.europa.eu/web/guest/regulations/reach/understanding-reach>
 - c. <http://echa.europa.eu/regulations/reach/substance-identity>
 - d. <http://echa.europa.eu/regulations/reach/registration>
 - e. <http://echa.europa.eu/regulations/reach/evaluation>
 - f. <http://echa.europa.eu/regulations/reach/authorisation>
 - g. <http://echa.europa.eu/regulations/reach/restriction>
 - h. <http://echa.europa.eu/regulations/reach/downstream-users>
 - i. <http://echa.europa.eu/regulations/reach/candidate-list-substances-in-articles>
14. Globally Harmonized System of Classification of Labeling of Chemicals (GHS), fourth revised edition; United Nations, 2011
http://www.unece.org/fileadmin/DAM/trans/danger/publi/ghs/ghs_rev04/English/ST-SG-AC10-30-Rev4e.pdf
 - a. Foreword
 - b. Part 1. Introduction
 - c. Part 2. Physical Hazards
 - d. Part 3. Health Hazards
 - e. Part 4. Environmental Hazards
15. REACH Legislation; European Commission Enterprise and Industry;
http://ec.europa.eu/enterprise/sectors/chemicals/documents/reach/index_en.htm
16. Global Product Strategy, ICCA Guidance on Chemical Risk Assessment, 2nd edition – 2011
http://www.icca-chem.org/ICCADocs/ICCA_GPS_July2011_LowResWEB.pdf
17. Responsible Care® Product Safety Code of Management Practices, American Chemistry Council, 2012
<http://responsiblecare.americanchemistry.com/Responsible-Care-Program-Elements/Product-Safety-Code/Responsible-Care-Product-Safety-Code-PDF.pdf>
18. Responsible Care® Management System Technical Specification, American Chemistry Council, 2013
<http://responsiblecare.americanchemistry.com/Responsible-Care-Program-Elements/Management-System-and-Certification/RCMS-Technical-Specifications.pdf>

Other reading materials will be identified and made available by the instructor.

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1	<ul style="list-style-type: none"> • Introductions, Syllabus Review, and Connections between course work and case studies • Connection of key Product Stewardship MS Concentration Elements to this course 	Identified Readings will be Assigned by Class later	See Below
2	<ul style="list-style-type: none"> • Legislation / regulation (Legs/Regs) enactment <ul style="list-style-type: none"> – From Societal Concerns to Product Stewardship (PS) Regulation – Legs/Regs Processes in major developed countries 		
3	<ul style="list-style-type: none"> • PS Leg/Reg Perspective <ul style="list-style-type: none"> – Historical Triggering Events – Initial Landmark Regulation(s) – U.S. TSCA – Growth trends 		
4	<ul style="list-style-type: none"> • PS Legs/Regs – I <ul style="list-style-type: none"> – Typical Types¹ – Extended description of each type 		
5	<ul style="list-style-type: none"> • PS Legs/Regs – II <ul style="list-style-type: none"> – Typical Types for Key Industries / Points in Supply Chain² – Extended description of each type 		
6	<ul style="list-style-type: none"> • PS Legs/Regs – III <ul style="list-style-type: none"> – Global Survey of Legs/Regs (which countries) – Related types of Legs/Regs³ 		
7	<ul style="list-style-type: none"> • PS Frameworks <ul style="list-style-type: none"> – Buyer Requirements – 3rd Party Systems – Non-regulatory bodies⁴ 		
8	<ul style="list-style-type: none"> • Legs/Regs Surveillance - I <ul style="list-style-type: none"> – Principles – Global Scope – Processes and Methodologies 		
9	<ul style="list-style-type: none"> • Legs/Regs Surveillance - II <ul style="list-style-type: none"> – Resource Options – Roles and Responsibilities – Tools and Systems 		

10	<ul style="list-style-type: none"> • Emerging Trends and Issues – I <ul style="list-style-type: none"> – Lifecycle of an Issue – Inventory of Current Issues – Description of Current Issues 		
11	<ul style="list-style-type: none"> • Emerging Trends and Issues – II <ul style="list-style-type: none"> – Processes and Methodologies to Monitor and Assess 		
12	<ul style="list-style-type: none"> • Legs/Regs Compliance - I <ul style="list-style-type: none"> – Legal Perspective – Principles 		
13	<ul style="list-style-type: none"> • Legs/Regs Compliance - II <ul style="list-style-type: none"> – Processes and Methodologies to <ul style="list-style-type: none"> + Monitor and Assess + Determine Impact + Confirm Implementation 		
14	<ul style="list-style-type: none"> • Engagement in the Legs/Regs Processes – I <ul style="list-style-type: none"> – Basic Engagement 		
15	<ul style="list-style-type: none"> • Engagement in the Legs/Regs Processes – II <ul style="list-style-type: none"> – Advocacy 		
16	<ul style="list-style-type: none"> • Discussion with Legs/Regs Stakeholders <ul style="list-style-type: none"> – Legislator – Regulator – Corporate Governmental Affairs 		
17	<ul style="list-style-type: none"> • Connect the Dots – How does this all fit together 		

Indiana University

Regulatory Affairs for Product Stewardship

Case Study and Assignments

Attachment I

This summarizes the approach and content of both the Case Study and Assignments for the Regulatory Affairs for Product Stewardship Course as well as the approach to Assess Grades.

The Case Study reinforces and applies the course learning's and enhances the student's Product Stewardship capabilities. It applies PS fundamentals to a product with which the student is familiar and reinforces course learning's. The assignments apply learning's from the respective class and, when completed, provide building block elements for the overall Case Study.

Following are descriptions of the Class Assignments. These are in addition to readings to prepare for the following Class.

- Class 2 – Legislation / Regulation Enactment
 - Select a significant Product EHS concern of 20 to 30 years ago. Evaluate its status today. Propose how the various aspects of the “virtuous cycle” played out.
 - Describe the primary similarities and differences in the Legislative / Regulatory process relevant to Product Stewardship among the U.S., Europe, and China
- Class 3 – Legislation / Regulation Perspective
 - Select a Product Stewardship Law or Regulation and Identify initial triggering Societal Concerns and Analyze roles filled by various organizations and bodies to advance these triggering concerns into Law
 - Evaluate if US TSCA has met its initial objectives
- Class 4 – Legislation / Regulation I
 - For one of the Primary types of Product Stewardship Regulations (e.g., inventory), compare the respective approaches in the U.S., Europe, and China
- Class 5 – Legislation / Regulation II
 - Select 2 and hopefully 3 points in a typical Supply Chain. For each point
 - + Identify significant Laws / Regulations in effect
 - + Describe additional burdens on producers at one of these Points relative to the preceding Points in the Supply Chain
- Class 6 – Legislation / Regulation III
 - Identify Major Product Markets (countries) and evaluate any potential Regulatory gaps relative to other Major Markets
 - Evaluate the impact of “Related Types of Product Legislation / Regulation” versus “Primary Types” discussed in Class 5
- Class 7 – Product Stewardship Frameworks
 - Select a Major Retailer's Buyer Requirements and evaluate
 - + Its consistency with existing Product Stewardship Legislation / Regulation
 - + Its grounding in evidence based science
 - + Its influence on a Product Segment relative to what would happen without these requirements
 - Evaluate the recommendations of a non-regulatory body (e.g., IARC) relative to an existing Product Stewardship regulation in a major country / region
- Class 8 – Legislation / Regulation Surveillance I
 - Evaluate and compare the Regulatory Surveillance Process for 2 or 3 selected companies
 - + Recommend improvements for one of these companies / Processes
- Class 9 – Legislation / Regulation Surveillance II
 - Evaluate and compare the Regulatory Surveillance Resources and Tools / Systems for 2 or 3 selected companies
 - + Recommend improvements for one of these companies
- Class 10 – Emerging Trends and Issues I
 - Identify the Lifecycle of a significant Product EHS concern of 20 to 30 years ago that was

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Regulatory Affairs for Product Stewardship

Case Study and Assignments

Attachment I

- evaluated in Class 1
 - Identify a more current Product EHS concern and evaluate how its Lifecycle relative to the older issue. Evaluate factors that have led to changes in the Lifecycle duration and intensity.
- Class 11 – Emerging Trends and Issues II
 - Evaluate and compare the Process to Monitor / Assess Emerging Trends / Issues for 2 or 3 selected companies
 - + Recommend improvements for one of these companies
- Class 12 – Legislation / Regulation Compliance I
 - Evaluate the requirements for Compliance with Product Stewardship Regulations among the U.S., Europe, and China
- Class 13 – Legislation / Regulation Compliance II
 - Evaluate and compare the Process to Monitor / Assess / Implement Laws / Regulations for 2 or 3 selected companies
 - + Recommend improvements for one of these companies
- Class 14 – Engagement in the Legislation / Regulation Process I
 - Evaluate and compare the Legislation / Regulation Engagement Process for 2 or 3 selected companies
 - + Recommend improvements for one of these companies
- Class 15 – Engagement in the Legislation / Regulation Process II
 - Evaluate and compare the Legislation / Regulation Advocacy Process for 2 or 3 selected companies
 - + Recommend improvements for one of these companies
- Class 16 – Discussion with Legislation / Regulation Stakeholders
 - Evaluate the perspectives of the respective Stakeholders represented in the Class
 - + Identify both their similarities and their differences
 - + Recommend bridging strategies to bring these Stakeholders to a position of consensus on a major Product Stewardship Issue
- Class 17 – Connect The Dots
 - Prepare a summary conclusion of the evaluation of one of the Companies and one of its key Product Stewardship Regulatory Processes. This evaluation will include both what its current approach and an overall Plan to improve.

As mentioned above, successful completion of each Class Assignment prepares all needed elements of the final “Connect the Dots” assignment. The student needs to review Class Assignment work and synthesize it to a concise and robust summary.

Indiana University

Regulatory Affairs for Product Stewardship

Grading Rubric

Attachment II

Grades for Class Assignments and the Case Study will be assessed on the following criteria:

- Completeness – have all elements been completed
- Comprehension – does the Student demonstrate an understanding and command of the concepts and approaches presented and discussed in the Course
- Logic – are the conclusions founded on the application of Evidence Based Science and course material to the respective Product
- Reasonableness – are the conclusions realistic and can they be applied in a “real-world” setting in a manner that is protective of human and environmental health while being economically feasible

These are further described below the Grading Rubric that will be applied for both Class Assignments and the Case Study.

CRITERION	STRONG	AVERAGE	WEAK
Completeness: Incorporation of all assignment elements	All requested elements robustly addressed. Additional considerations incorporated.	All requested elements have been addressed	Many of the requested elements have been addressed, but some key elements have not been incorporated
Comprehension: Identification of Main Issues/Problems	Identifies and demonstrates a sophisticated understanding of the main issues/problems in the case study.	Identifies and demonstrates an accomplished understanding of most of the issues/problems.	Identifies and demonstrates acceptable understanding of some of the issues/problems in the case study.
Logic: Analysis and Evaluation of Issues/Problems	Presents an insightful and thorough analysis of all identified issues/problems; includes all necessary calculations.	Presents a thorough analysis of most of the issues identified; missing some necessary calculations.	Presents a superficial or incomplete analysis of some of the identified issues; omits necessary calculations.
Reasonableness: Recommendations on Effective Solutions/Strategies	Supports diagnosis and opinions with strong arguments and well-documented evidence; presents a balanced and critical view; interpretation is both reasonable and objective.	Supports diagnosis and opinions with limited reasoning and evidence; presents a somewhat one-sided argument; demonstrates little engagement with ideas presented.	Little or no action suggested and/or inappropriate solutions proposed to the issues in the case study.

******PENDING GAC APPROVAL******

**Indiana University Fairbanks School of Public Health
Department of Environmental Health Science
Fall 2015**

COURSE TITLE: Product Stewardship Strategy and Management
COURSE NUMBER: PBHL-A676
DATE/TIME:
LOCATION: Hybrid
FACULTY: Gailen (Gail) A. Hart
908.399.9692 (Phone)
gailhart@iupui.edu
Consultation by appointment

COURSE DESCRIPTION

This course presents integrated product stewardship and business strategy framework, interacting with leadership at all levels throughout the organization. It explores how businesses set and attain overarching goals by integrating risk assessments, regulatory, and other considerations. Responsibility and performance required of product stewardship programs and the expectations of product stewardship professionals is emphasized.

MPH PROGRAM COMPETENCIES ADDRESSED IN THIS COURSE

1. Specify approaches to assess, prevent and control environmental and occupational hazards to human health and safety.
2. Collect and disseminate public health data through the use of technology and media
3. Use systems methods to analyze the effects of political, social and economic influences on public health systems at the individual, community, state, national and international levels.

ENVIRONMENTAL HEALTH CONCENTRATION COMPETENCIES ADDRESSED IN THIS COURSE

1. Apply a framework to anticipate, recognize, evaluate, prevent, and control environmental and occupational exposures that pose risks to human health and safety.
2. Select and apply appropriate risk assessment methods for environmental and occupational health and safety issues.
3. Assess and recommend prevention, control, and management strategies for environmental and occupational health and safety issues.
4. Cultivate effective communication with diverse stakeholders on environmental and occupational health and safety issues.

COURSE LEARNING OBJECTIVES

- Apply the framework of sound management system principles and demonstrate how it applies to products to prevent and control environmental and occupational exposures that pose risks to human health and safety.
- Understand how product stewardship management concepts integrates into the product life cycle and the at the end of the each stage how the concepts produces various results of the product.
- Understand product stewardship organizations and how the personnel system designs are developed, evaluated and applied to ensure the quality and success of the organizations future.
- Explain product stewardship performance measurement and improvement systems.
- Describe product stewardship engagement with external regulatory bodies and industries.
- Understand long-term product stewardship processes and implications.

- Design and improvement of Product Stewardship personnel systems
 - Critical Skills
 - Skill Development
 - Personnel Source
 - Personnel Development
- Job Family Approach

REQUIRED COURSE MATERIALS

Reports and Articles

1. *Introduction to Management and Leadership Concepts, Principles, and Practices*; Kurt Darr, http://faculty.ksu.edu.sa/mohdalmumani/1011/42910_CH02_007_024.pdf
2. ISO
 - a. Management systems <http://www.iso.org/iso/home/standards/management-standards.htm>
 - b. Quality – 9000 / 9001 / 9004
http://www.iso.org/iso/home/store/catalogue_ics/catalogue_detail_ics.htm?csnumber=46486
 - c. Environmental – 14001 / 14004
http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=60857
 - d. Risk Management – 31000
http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=43170
 - e. Life cycle
http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=37456
3. Other Industries Responsible Care® equivalents
 - a. Consumer Specialty Products Association <http://www.productcare.com/>
 - b. Personal Care Products Council <http://www.personalcarecouncil.org/about-us/personal-care-products-council-consumer-commitment-code>
 - c. Chemical Distributors http://www.nacd.com/default/assets/File/comparisonRpt_web.pdf
 - d. Oil & Gas <http://www.ipieca.org/focus-areas>
4. Organization Design
 - a. *Key principles of organization design: diagnosing issues in a company's structure*; John Karren, PricewaterhouseCoopers LLP, January 2009
https://www.pwc.com/en_US/us/people-management/assets/key-principles-organization-design.pdf
 - b. *Five Approaches to Organization Design*; CliffNotes, <http://www.cliffsnotes.com/more-subjects/principles-of-management/organizational-design-and-structure/five-approaches-to-organizational-design>
5. Critical Skills Definition and Assessment
 - a. *What Do Employers Really Want? Top Skills and Values Employers Seek from Job-Seekers*; Randall S. Hansen, Ph.D., and Katharine Hansen, Ph.D., http://www.quintcareers.com/job_skills_values.html
 - b. *Resume Skills: List of Skills for Resume, Sample: Resume Job Skills Examples*; <http://www.job-interview-site.com/resume-skills-list-of-skills-for-resume-sample-resume-skills-examples.html>
6. Performance Improvement
 - a. Performance Measurement
 - i. *The performance measurement manifesto*; Harvard Business Review, 1991, , 69(1):131-137 <http://europepmc.org/abstract/med/10109469>
 - ii. *Integrated performance measurement systems: a development guide*; Bititci, Carrie, McDevitt; International Journal of Operations and Production Management, <http://dx.doi.org/10.1108/01443579710167230>
 - b. Work Process Optimization
 - i. *AT&T Reengineering Handbook*; ISBN 0-932764-36-3
 - c. Benchmarking
 - i. *Benchmarking*; American Society of Quality, <http://asq.org/learn-about-quality/benchmarking/overview/overview.html>
 - ii. *Benchmarking Portal*; APQC, <http://www.apqc.org/benchmarking-portal>
 - d. Project Management
 - i. *Project Management Process*; Van Haren Publishing, 2009 01 01; <http://www.ipma->

library.org/Player/eKnowledge/project_management_process.pdf

- e. Continuous Improvement
 - i.
7. Change Management
 - a. *Defining a Regulatory Change Management Process*; GRC2020, 2015 01 22, <http://grc2020.com/2015/01/22/defining-a-regulatory-change-management-process/>
 - b. *Change Control Process*; University of California Berkeley Operational Excellence Program Office, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=23&cad=rja&uact=8&ved=0CMoBEBYwFg&url=http%3A%2F%2Foe.berkeley.edu%2Fsites%2Fdefault%2Ffiles%2F15-ChangeControlProcessv1.doc&ei=6fjbVdymNMIagwTR6IGYDQ&usq=AFQjCNFIK_kdS5pNpT-66xUocFiZgJbUPg&sig2=vhZTZx3q31rLzLWQUB1yA
8. Product Defense / Advocacy
9. Responsible Care® Product Safety Code of Management Practices, American Chemistry Council, 2012 <http://responsiblecare.americanchemistry.com/Responsible-Care-Program-Elements/Product-Safety-Code/Responsible-Care-Product-Safety-Code-PDF.pdf>
10. Responsible Care® Management System Technical Specification, American Chemistry Council, 2013 <http://responsiblecare.americanchemistry.com/Responsible-Care-Program-Elements/Management-System-and-Certification/RCMS-Technical-Specifications.pdf> Global Product Strategy, ICCA Guidance on Chemical Risk Assessment, 2nd edition – 2011 http://www.icca-chem.org/ICCADocs/ICCA_GPS_July2011_LowResWEB.pdf
11. Perspective: The Stage-Gate Idea-to-Launch Process – Update, What’s New and NexGen Systems, Stage-Gate International and Product Development Institute Inc. (This paper appeared in modified format as the lead article in the Journal of Product Innovation Management, R.G. Cooper, “The Stage-Gate Idea-to-Launch Process–Update, What’s New and NexGen Systems,” J. Product Innovation Management, Volume 25, Number 3, May 2008, pp 213-232) http://www.stage-gate.com/downloads/wp/wp_30.pdf
12. Forging New Links – Enhancing Supply Chain Value Through Environmental Excellence, Global Environmental Management Initiative (GEMI); Hugh Shares and John Harris, 2004 <http://www.gemi.org/supplychain/resources/ForgingNewLinks.pdf>
13. New Paths to Business Value, Strategic Sourcing – Environment, Health, and Safety; Global Environmental Management Initiative, March 2001 <http://www.gemi.org/resources/newpath.pdf>
14. Purchasing’s Contribution to the Socially Responsible Management of the Supply Chain, Craig R. Carter and Marianne M. Jennings, Center for Advanced Purchasing Studies, 2000 http://www.ism.ws/files/SR/capsArticle_PurchasingsContribution.pdf

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3	<ul style="list-style-type: none"> • Policy <ul style="list-style-type: none"> – Development – Deployment 		
4	<ul style="list-style-type: none"> • Product Stewardship integration into the Product Development Cycle <ul style="list-style-type: none"> – Pre-marketing – Launch – On-the-market – End of Life 		
5	<ul style="list-style-type: none"> • Design and improvement of Product Stewardship organizations <ul style="list-style-type: none"> – Organization Design – reporting, governance, responsibility, and resource alternatives – Global Organization Challenges 		
6	<ul style="list-style-type: none"> • Design and improvement of Product Stewardship personnel systems <ul style="list-style-type: none"> – Critical Skills – Skill Development – Personnel Source – Personnel Development – Job Family Approach 		
7	<ul style="list-style-type: none"> • Product Stewardship performance measurement and improvement <ul style="list-style-type: none"> – Measuring Product Stewardship Performance and Effectiveness 		
8	<ul style="list-style-type: none"> • Product Stewardship performance measurement and improvement 		

8	<ul style="list-style-type: none"> • Product Stewardship performance measurement and improvement <ul style="list-style-type: none"> – Continuous Improvement Methodologies Applied to Product Stewardship + Work Process Optimization + Benchmarking + Project Management 		
9	<ul style="list-style-type: none"> • Product Stewardship performance measurement and improvement <ul style="list-style-type: none"> – Continuous Improvement Methodologies Applied to Product Stewardship + (cont.) 		
10	<ul style="list-style-type: none"> • Product Stewardship Integration into the larger Corporation <ul style="list-style-type: none"> – Connections to EHS activities and responsibilities – Managing Change 		
11	<ul style="list-style-type: none"> • Product Defense and Advocacy <ul style="list-style-type: none"> – Product EHS Knowledge Enhancement – Typical Challenges to Products EHS Attributes 		
12	<ul style="list-style-type: none"> • Product Defense and Advocacy <ul style="list-style-type: none"> – Product Defense and Advocacy – Competing versus Product Alternatives 		
13	<ul style="list-style-type: none"> • Product Stewardship engagement beyond the corporation – regulatory bodies, industries, etc. 		
14	<ul style="list-style-type: none"> • Product Stewardship engagement beyond the corporation – regulatory bodies, industries, etc. 		
15	<ul style="list-style-type: none"> • Preparing today for Long-term Product Stewardship implications <ul style="list-style-type: none"> – Advancing Science 		

16	<ul style="list-style-type: none">• Preparing today for Long-term Product Stewardship implications<ul style="list-style-type: none">– Managing Knowledge– Anticipating and Preparing for Future Challenges (e.g., Lawsuits)		
17	<ul style="list-style-type: none">• Connect the Dots – How does this all fit together		

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Case Study and Assignments

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This summarizes the approach and content of both the Case Study and Assignments for the Product Stewardship Strategy and Management Course as well as the approach to Assess Grades.

The Case Study reinforces and applies the course learning's and enhances the student's Product Stewardship capabilities. It applies PS fundamentals to a product with which the student is familiar and reinforces course learning's. The assignments apply learning's from the respective class and, when completed, provide building block elements for the overall Case Study.

Following are descriptions of the Class Assignments. These are in addition to readings to prepare for the following Class.

- Class 2 – Management Systems
 - Compare ACC's Product Stewardship Management Systems to the classic elements of an effective and robust Management System. Recommend and justify improvements.
 - Evaluate how Industry Product Stewardship Management Systems vary by the industry's position in the Product Supply Chain / Life Cycle. Recommend and justify improvements.
- Class 3 – Policy
 - Select at least 2 companies representing major and minor scope of activity. For these companies, obtain and evaluate their Product Stewardship and related Policies. This evaluation should include determination of the approach and effectiveness of the Policies deployment and implementation.
- Class 4 – Product Development
 - Select at least 2 companies representing different positions in the Supply Chain. For these companies, obtain and evaluate their Product Development Process. This evaluation should include determination of the approach and effectiveness of this Process.
- Class 5 – Product Stewardship Organizations
 - Select at least 2 companies representing different breadth of global activity (e.g., one international in scope and one primarily domestic in scope). For these companies, obtain and evaluate their Product Stewardship Organization. This evaluation should include determination of the approach and effectiveness of this Organization.
- Class 6 – Product Stewardship Personnel
 - Select at least 2 companies representing different breadth of global activity (e.g., one international in scope and one primarily domestic in scope). For these companies, obtain and evaluate their Product Stewardship Personnel Systems. This evaluation should include determination of the approach and effectiveness of these Systems.
- Class 7 – Product Stewardship Performance I
 - Select at least 2 companies representing different breadth of global activity (e.g., one international in scope and one primarily domestic in scope). For these companies, obtain and evaluate their Approach to measure and improve Product Stewardship Performance. This evaluation should include determination of the approach and effectiveness of these measurements.
- Class 8 – Product Stewardship Performance II
 - For one of the above companies, evaluate 2 significant Product Stewardship Work Processes and make recommendations for improvements. Also recommend how to establish Performance Goals for this Work Process based on Benchmarks.
- Class 9 – Product Stewardship Performance III
 - For both of the significant Product Stewardship Work Processes evaluated in the previous Class, develop an approach to identify and implement ongoing Continuous Improvements in addition to and beyond the overall Improvement Recommendations.
- Class 10 – Corporate Integration
 - For one of the companies
 - + Obtain an understanding of the connections and integration of Product Stewardship into the

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- company's activities and operations, including EHS. Evaluate the effectiveness of this integration and make improvement recommendations.
 - + Obtain and understanding of the Change Management approaches especially instrumental to Product Stewardship, including Product Improvement / Development; Product Supply Chain. Evaluate the effectiveness of this integration and make improvement recommendations.
- Class 11 – Product Defense / Advocacy I
 - Identify a substance / product with current claims about its intrinsic EHS attributes and overall safety to humans and the environment. For this product,
 - + Identify the extent of EHS knowledge. Identify potential gaps in knowledge and recommend how to close or minimize these gaps.
 - + Evaluate and assess the merits of the claims about the product
- Class 12 – Product Defense / Advocacy II
 - For the substance / product selected in the previous class / assignment,
 - + Identify and evaluate current efforts and approaches to defend the safety of this product
 - + Compare the product's EHS attributes to a competitive product.
 - + Based on these evaluations, recommend if the product should be defended and if not, recommend how to minimize its risk implications
- Class 13 – Product Stewardship Engagement Beyond the Corporation I
 - For one of the evaluated companies
 - + Identify their key industry association and the breadth and depth of this company' engagement in the industry and this association
 - + Identify key Product Stewardship regulatory bodies that will affect this company. Recommend approaches for the company's engagement with one of these Regulatory Bodies
- Class 14 – Product Stewardship Engagement Beyond the Corporation II
 - Develop a Regulatory Body Engagement Plan for one of the evaluated Companies which has a need to defend / advocate for the overall safety of one of its Products
- Class 15 – Long-Term Product Stewardship Implications I
 - For the selected Product which a company is defending / advocating its overall safety
 - + Recommend how to improve the state of the science for one of the issues of that Product. Recommend how to leverage this effort across the industry producing and using this Product.
 - + Recommend how to modify / improve regulations that affect this Product.
- Class 16 – Long-Term Product Stewardship Implications II
 - For the selected Product which a company is defending / advocating its overall safety
 - + Identify currently known and emerging Issues.
 - + Recommend how to advance science knowledge of the Product to determine its viability against these emerging claims.
- Class 17 – Connect The Dots
 - Prepare a summary conclusion of the evaluation of one of the Companies and one of its Products. This evaluation will include both what is known and an overall Plan to advance from current issues.

As mentioned above, successful completion of each Class Assignment prepares all needed elements of the final "Connect the Dots" assignment. The student needs to review Class Assignment work and synthesize it to a concise and robust summary.

- Grades for Class Assignments and the Case Study will be assessed on the following criteria:
- Completeness – have all elements been completed
 - Comprehension – does the Student demonstrate an understanding and command of the concepts and approaches presented and discussed in the Course
 - Logic – are the conclusions founded on the application of Evidence Based Science and course

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- material to the respective Product
 - Reasonableness – are the conclusions realistic and can they be applied in a “real-world” setting in a manner that is protective of human and environmental health while being economically feasible
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Grading Rubric

Attachment II

Grades for Class Assignments and the Case Study will be assessed on the following criteria:

- Completeness – have all elements been completed
- Comprehension – does the Student demonstrate an understanding and command of the concepts and approaches presented and discussed in the Course
- Logic – are the conclusions founded on the application of Evidence Based Science and course material to the respective Product
- Reasonableness – are the conclusions realistic and can they be applied in a “real-world” setting in a manner that is protective of human and environmental health while being economically feasible

These are further described below the Grading Rubric that will be applied for both Class Assignments and the Case Study.

CRITERION	STRONG	AVERAGE	WEAK
Completeness: Incorporation of all assignment elements	All requested elements robustly addressed. Additional considerations incorporated.	All requested elements have been addressed	Many of the requested elements have been addressed, but some key elements have not been incorporated
Comprehension: Identification of Main Issues/Problems	Identifies and demonstrates a sophisticated understanding of the main issues/problems in the case study.	Identifies and demonstrates an accomplished understanding of most of the issues/problems.	Identifies and demonstrates acceptable understanding of some of the issues/problems in the case study.
Logic: Analysis and Evaluation of Issues/Problems	Presents an insightful and thorough analysis of all identified issues/problems; includes all necessary calculations.	Presents a thorough analysis of most of the issues identified; missing some necessary calculations.	Presents a superficial or incomplete analysis of some of the identified issues; omits necessary calculations.
Reasonableness: Recommendations on Effective Solutions/Strategies	Supports diagnosis and opinions with strong arguments and well-documented evidence; presents a balanced and critical view; interpretation is both reasonable and objective.	Supports diagnosis and opinions with limited reasoning and evidence; presents a somewhat one- sided argument; demonstrates little engagement with ideas presented.	Little or no action suggested and/or inappropriate solutions proposed to the issues in the case study.