January 24, 2008

Submitting Organization: Unileaf
Contributing Organization: Exxon Mobil Chemical
A film extrusion company to be named

Barbara E. Barry
1451 S. Clark Street Chicago, IL 60605
Unileaf@sbcglobal.net and Unileaf@comcast.net
312-461-0320 or 773-498-9595

Concerns regarding the manufacture, use and disposal of PVC, POLY VINYL CHLORIDE surfaced in Europe in the early 1990's. My original idea was to improve an industry which was falling behind in innovation. Concurrently I learned about the alleged harm PVC was having on our environment with most concerns emerging out of Europe. Because the Europeans burn their garbage, they were more keenly aware of the harmful effects of chemicals released into the environment.
My business is the custom stationary and packaging manufacturing industries, heavy users of PVC. Dioxin, a known carcinogen, is a by product of PVC among other questionable chemical components. Several attempts have been made to eliminate the use of PVC in many applications and industries. However, this is no easy undertaking for many reasons.

PVC possesses many attributes that are desirable in manufacturing a wide array of products in numerous industries. Although the greening of America is a priority for companies and individuals, the enormous challenge in developing non PVC products is endless. Creating films designed to work with existing RF (radio frequency), sealing equipment, incorporating other specifications into the fi,m while making it commercially acceptable, cost competitive and profitable for the producer was my goal. There is considerable complexity, experimentation, testing, data analysis and investment in time and money involved in a long term project like this one.

Unileaf stands for unique specialty film for the loose leaf industry that is friendly to the environment. Our effort was ahead of the pack in PVC replacement. One large competitor abandoned their effort in 1999 due to many expensive mistakes. Unileaf began as a team of four experts, two polymer scientists, one cost estimator and me, the project initiator, tester and manager. By combing our experience in the flexible stationary and packaging industry with the polymer

scientists, we began the development of Unileaf's proprietary film, Polytough. Our toll operator or film Co-extrusion Company was Exxon Films, located in Lake Zurich, IL.

As project manager, I experimented with, gauged test results and monitored every aspect of the film's development and continuous improvement. With my numerous contacts in target industries, I simultaneously gathered critical marketing data from prospective clients so to accurately gauge the market demand and industry changes.

Unileaf, pioneered this effort when others abandoned it due to the extreme degree of difficulty, commitment, cost and other obstacles. I'm pleased to tell you that with the establishment of new strategic partnerships Polytough is much closer to commercial introduction into the market place. Although we've come a long way, additional work needs to be done. Features need to be added, a specific formula, depending on each application, should be patented or protected. The marketing strategy put in place needs to be energized with updated communication regarding availability of Polytough as the PVC replacement for the stationary, packaging, children's toys, construction and outdoor items, the medical field including personal care. Although our focus is PVC, other plastics have raised concerns including ABS, PC and PS. The EPA issued a report titled The Economics of Phasing out PVC in December 2003. Due to the economic slide into recession and the cost of R&D, many green initiatives have been abandoned or placed on hold.

We were unable to solve our greatest challenge, which was to make the film RF sealable. While Polytough had many features and benefits beyond the environmental ones, due to the polarity, the film would RF seal. It would not tear away to form a product. We could not modify it through the formula, the RF equipment or the hear seal dies to work optimally in a manufacturing environment. Due to the extraordinary strength, it stretched rather than formed a seal to have the excess film tear away.

I was determined to not give up on this project although I had to be objective with the results. My vision for this project is almost two decades long and while I am disappointed that we did not find a commercial application sooner, there is some light at the end of the development tunnel.
Sonic welding appeared on the market around eight years ago. This equipment made in Europe successfully heat seals and tears away the excess film while manufacturing product. While many large stationary manufacturers invested in

this equipment and switched to Polypropylene, many continue to seek out plastic that possess better attributes and are more cost effective.

The demand for green products with the elimination of PVC continues to grow. I am convinced safer plastics are of critical national need and removing these harmful chemicals will result in a safer, cleaner environment for the USA and the world. Trace elements of many chemicals are found in the blood stream of millions of people. Mysterious illnesses and chemicals grow nationally. Emerging market economies with new plastic plants are increasing pollution with increasing signs of illness. Bill Moyers, the world respected journalist, produced an impressive video documenting the making of PVC in the 1960'S. Many hazards related to the making and disposal of PVC have been hidden from the general public by these chemical companies. In addition to Dioxin, DOP and other additives are sited in the EPA report "Phasing out PVC."

In addition, this initiative can result in jobs and profit for American companies. Organizations like the Center for Environmental Justice continuously make strong pleas to eliminate PVC but business, especially in this economy, have not aggressively moved forward. This is an endeavor that often benefits from a small entrepreneurial company like Unileaf but it requires programs such as offered by the Technology Innovation Program

History of Unileaf's development of Polytough

Our goal is to introduce co-extruded, non-PVC, weld able film to the above mentioned industries. We need further development to bring together the most progressive scientists, a specific chemical company and a film extrusion company with an innovative marketing plan to bring this effort into one finished composition. If we do some final coordination with the assist of the TIP there are opportunities to expand into other industries and investigate whether we can take our expertise and apply it to rigid non PVC replacement plastic.

NATIONAL NEED and TRANSFORMATIONAL RESULTS

Numerous studies have been done by the EPA regarding the hazards of PVC. The Global Development and Environmental Institute, Tufts University published a study, The Economics of Phasing out PVC. D.O.P a component of PVC has been banned in California. Concerns of DOP, and other harmful chemicals can leak out of land fills and into our water supply. There is on going evidence that harmful chemicals are in our air, water and food supplies.

Many of these chemicals are carcinogens which can also be ingested into the digestive system. The concerns over baby tethers and toys were addressed by companies offering alternative safer plastics to replace phthalates.

Polytough possesses features and benefits more desirable than PVC including cold cracking qualities and strength. As a green product, it offers a commercial grade product to manufacturing industries whose clients insist on using green products in their stores or companies. Offering professionally designed and optimal performing green products is an investment in our cleaner, safer environment.
The greater societal impact is in the health of the individuals. If trace elements of chemicals are found in the blood streams of a large part of the population, a film such as Polytough needs to eliminate hazardous chemicals in the environment. A healthier population translates into a more productive workforce with the intent to reduce major illnesses and healthcare costs.

Unileaf started its resin and extrusion work with Exxon Films. I teamed with two polymer scientists who served as consultants to the project. In 1996 Exxon Films was sold to Tredegar Corporation. Tredegar Corporation ran a few versions of the film but made a corporate decision to sell certain plants and concentrate on their core hygiene and health film business. I had to find a new film extrusion company. With the right equipment I sought out a film company who was a large user of Exxon resin in order to get the best price based on volume. This is still a work in progress.

The majority of equipment owned by potential clients was designed for Radio Frequency sealing. Although we did original film versions, modified future versions, we were not able to make a film that was RF sealable. I worked with RF equipment manufactures, die manufacturers, the scientists but due to the polarity of the film combined with the existing available polymers, the results looked rather bleak.

However there was a major breakthrough a few years later. Two European companies developed sonic/thermal sealing equipment which sealed and tore away the edges with ease. That opened up the doors once again and solved the largest barrier to marketing this film. In the meantime, I did stay in contact with Exxon Chemical and the original scientists who generously and graciously offer knowledge, experience and support throughout this endeavor.
The down side to the introduction of sonic/thermal sealing is it opened up the doors for polypropylene which was readily available on the market. While

polypropylene has many fine characteristics, Polytough offered greater strength and cold cracking qualities. Polypropylene splits with colder temperatures. Polypropylene costs have risen significantly over the years unlike PVC which has stabilized.

Throughout the numerous changes in this project, one constant was Exxon Mobil Chemical Company, the supplier of the base resin in the composition. As I modified my strategy not only due to changes to the industry but the fact that Tredegar was no longer the film extruder. I'm in the process of finding a new extruder with certain criteria required to market economically and efficiently. Tredegar purchase huge amounts of resin from Exxon Mobil which they extended to my efforts this making Polytough competitive with other films and PVC.
Part of this equation is the need to find another large user of resins to keep Polytough cost competitive. Exxon Chemical commands a premium for their work in many cases with the best pricing going to large users of their resin. This is not an easy task to find a new film extruder and part of this proposal is to seek out ideal candidates for the film.

Although relationships take time to develop, the wait could be well worth it. ExxonMobil Chemical Co recently developed a new resin specifically for packaging. With their vast and extraordinary resources and their proprietary technology engineered resins with outstanding performance potential that can be the basis for the latest version of Polytough. The purpose of my letter is to request funds so I can move the effort into the final phase of development and market this film as soon as possible. It is crucial to have an agreement with Exxon Chemical Company, the extruder of the film and my company.

C. Esentials for TIP Funding
JUSTIFICATION FOR GOVERNMENT ATTENTION

As the world has changed radically due to technology, the internet, the global economy, the needs of the industry have changed too. Much of the information use to be printed, stored in binders and sheet protectors and shipped to clients is not sent over the internet and printed on small office printers. However, the design of the clearview binder, allowing a client to customize their binders with their own printed sheets, is a large market. The major companies in this area have invested in the high speed thermal sealing machines. A number of these companies have contacted me recently inquiring about the status of Polytough.

The packaging industry, a huge user of PVC packaging, could be converted to non PVC plastics if such a film would be available, per their specification at a competitive cost. A reasonable volume with growth potential would increase production and reduce cost as sales grew. Our intent, once this film is perfected is to market it to other industries seeking **green** products. Some argue continuing use of PVC is justified due to its properties however that should not be a convincing argument to not search for alternative films with more green attributes.

BENEFITS TO GOVERNMENT SUPPORT

With the intent on securing a specific formula that I could either own or co-own, I approached Exxon Chemical with my intent to market this film and asked for their guidance in finding a suitable extrusion company. Exxon Chemical recently completed R&D on the new resins and the willingness and ability to make the film per specification; I am ready to make film samples based on client specification for this industry. Another huge benefit is this film can be marketed to other industries requiring a green, non-PVC film.

The USA has lost a great deal of its manufacturing capability to overseas manufacturers. This is an opportunity to reclaim the USA's ability to make a world class product. Once the flexible film is complete, we'd like to put our efforts into developing a rigid PVC replacement.

There is limited competition in the field at this time.
Due to strained resources, many companies have abandoned their R&D projects which can leave the USA behind as a world leader in new products. Jobs can be created if we are able to create a proprietary film and market it with speed and excellence. Although I cannot patent any product developed by Exxon, I've discussed some ownership or distribution rights with them and some candidates who could extrude this film.
However there are patent or ownership rights that need to be explored when the years of my R&D, collected data and thermal sealing are figured into the formula. This could result in work for law firms as well.

Export opportunities into the European, Asian and other markets.

An aggressive marketing program is in place. We'll notify current clients using marketing strategies and e-commerce tools with data collection to reach our base.

FUTURE RESEARCH BENEFITS AND BROADER GROWTH AGENDA

Polytough is a flexible film and plans to introduce it to industries that require the specifications as described previously. There is potential anywhere from pit pool liners to shower curtains. However there is huge potential in a rigid PVC replacement. Every metropolitan and rural area in the USA must evaluate their infrastructure. Many metal pipes are replaced with PVC piping. Due to the enormous amount of work and personal resources I've devoted to the development of Polytough since 1990, I can not speak with certainty or authority about the rigid PVC. But if we as a nation believe, based on science, that PVC is harmful, has limitations in specifications and superior resins are available, then the next step is to develop non PVC rigid products. If the hazards of PVC apply to flexible films doesn't it stand to reason that these same concerns apply to rigid films? The fact that dioxin and other harmful chemicals can leak from plastics, is it worth the medical and scientific research to investigate whether this could be a contributing force to cancer and other major illnesses.

In many cases, plastic is not the best product to use for every application. Steel or other metals are superior for their own special strengths and characteristics, however, for a reasonably priced products line, plastic fits the bill. The intent is to replace a potentially harmful plastic with a green plastic with nothing harmful in its composition or disposal.

This major effort can lead to a greener, safer cleaner environment. Polytough, priced competitively by accelerating volume, can be profitable to all involved. With the increase in unemployment and erosion of manufacturing in the USA This is a unique and progressive opportunity to introduce green plastics to the world with technology, experience and creativity leading the way.
Much needed funding for cash flow and sample making purposes is needed by Unileaf at this juncture. However, we can move on it ***now.***
As we succeed and become profitable, resources can be invested into high risk non PVC products rigid plastic profits with national and international benefits.

We can be healthier while restoring the USA reputation and innovators and inventors while creating profits for the prosperity of many Americans.

Barbara E. Barry
CEO
Unileaf Chicago, IL 60605
unileaf@sbcglobal.net or ufilmsonline@comast.net