Goals and Motivation
• Mission: The neck guard was created in order to provide better protection for ice hockey players.
• Motivation: As a hockey player, Alex received numerous injuries to the collar bone area and sought to create a product that provided better protection at a competitive price.

Minimum Viable Product
• Utilizes a non-newtonian foam coupled with an ISO 13997: 1999 Level 5 cut resistant fabric, and 1680 D Ballistic Nylon.
• Currently, the product is being deployed for sale in a very small ice hockey community in order to work out kinks before releasing to the larger hockey market.

Abstract
ESPN Sports Science® conducted a study in 2014 which concluded that hits in the National Hockey League (NHL®) were 17% harder than hits in the National Football League (NFL®). Only adding to the threat of injury in hockey are the 8 inch steel blades on skates used to get players moving at an extreme speed, but also the hockey sticks and pucks used in the game. Hockey sticks are made of a composite fiber, which is not a material you want to be hit with, and the rubber puck used has a top velocity of over 100mph in the NHL®.

Feasibility
The price is feasible as it compares to existing products on the market. Custom options for users that require added protection and modifications will increase profit margins and provide added premium protection. The design parameters fit a large majority of users on the existing market which will also allow for bulk production of materials and standardization of labor.

Cut-Tox® PRO Comparison Charts

<table>
<thead>
<tr>
<th>Property</th>
<th>Density</th>
<th>Hardness</th>
<th>Tensile Strength</th>
<th>Compressive Strength</th>
<th>Tensile Modulus</th>
<th>Impact Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>kg/m³</td>
<td>Shore 00</td>
<td>N/mm²</td>
<td>kPa</td>
<td>DTS061</td>
<td>kN</td>
</tr>
<tr>
<td>Data</td>
<td>400-500</td>
<td>76</td>
<td>1.51</td>
<td>140</td>
<td>0.47</td>
<td>3.9</td>
</tr>
</tbody>
</table>

New Venture Concept
• Utilize a non-newtonian foam coupled with a cut resistant fabric in order to reduce ice hockey injuries.
• Intend to examine other applications from sports to military to automotive applications.
• Right now, competitor’s neck guards use LD foam, HD plastic, and low denier nylon which do not provide sufficient protection.

Delivery Channels
The product is currently deployed through online channels. This includes online hockey communities on social media and a dedicated website. These two channels leverage instant personal communication with the consumer.