



R&D Project Plan for HYDRGEL Development

Project Title: Advanced Development of **HYDRGEL** Water Purification Pouches

Objective: To enhance the capabilities of **HYDRGEL** pouches in removing all known contaminants, optimizing pack size and reusability, and developing user-friendly secondary packaging solutions.

Key R&D Areas:

1. Contaminant Removal Capabilities
2. Pack Size and Reusability
3. Secondary Packaging Development

Project Duration: 18 months

Collaboration: In partnership with a European research and development partner

Project Manager: TO BE CONFIRMED

Key Team Members:

1. **R&D Scientist:** Specializing in water purification technology.
2. **Engineer:** Focusing on product design and material science.
3. **Field Test Coordinator:** Managing real-world testing and data collection.
4. **Regulatory:** Ensuring compliance with international standards.
5. **Product Designer:** Developing user-friendly secondary packaging solutions.

Budget and Resources:

- Detailed budget allocation for each project dimension.
- Resource planning for laboratory and field testing.

Communication and Reporting:

- Regular meetings with European partners for updates and collaboration.
- Monthly progress reports to track milestones and deliverables.

Risk Management:

- Identify potential risks and develop mitigation strategies.
- Monitor project progress and adjust plans as necessary.

KEY R&D AREAS:

1. Contaminant Removal Capabilities

Objective: To test and develop **HYDRGEL** pouches capable of removing all known contaminants, including cyanide, diarrhea-causing pathogens, typhoid, and cholera.

Key Activities:

Literature Review and Benchmarking (Month 1-2):

- Conduct an extensive literature review on existing water purification technologies.
- Benchmark against products in the market to identify strengths and weaknesses.
- Focus on technologies effective against cyanide, diarrhea-causing pathogens, typhoid, and cholera.

Prototype Development (Month 3-6):

- Develop initial prototypes with enhanced contaminant removal capabilities.
- Integrate advanced filtration materials and chemical treatments.
- Design prototypes to target specific contaminants identified in benchmarking.

Laboratory Testing (Month 7-9):

- Conduct controlled laboratory tests to measure the efficacy of the prototypes.
- Use standard testing protocols to evaluate contaminant removal efficiency.
- Optimize the composition and structure based on test results, focusing on maximizing efficacy while maintaining cost-efficiency.

Field Testing (Month 10-12):

- Deploy prototypes in diverse environments to validate laboratory results.
- Collect and analyze water samples before and after filtration.
- Adjust prototypes based on field performance to enhance applicability.

Regulatory Compliance (Month 13-18):

- Ensure all developed products meet international water quality standards.
- Work with regulatory bodies to obtain necessary certifications and approvals.
- Prepare comprehensive documentation to support compliance efforts.

Milestones:

- Literature Review and Benchmarking completed by Month 2
- Prototype Development completed by Month 6
- Laboratory Testing completed by Month 9
- Field Testing completed by Month 12
- Regulatory Compliance achieved by Month 18

2. Pack Size and Reusability

Objective: To optimize the **HYDRGEL** pouch for increased pack size (up to 1 liter) and develop a widget to count and predict the number of remaining uses.

Key Activities:

Design and Engineering (Month 1-4):

- Redesign the **HYDRGEL** pouch to hold up to 1 liter of water.
- Integrate durable materials to maintain integrity with increased volume.
- Ensure the design is scalable and manufacturable.

Widget Development (Month 5-8):

- Develop a small, integrated widget to track and predict the number of remaining uses.
- Design the widget to be user-friendly, reliable, and cost-effective.
- Conduct software and hardware integration to ensure seamless functionality.

Usability Testing (Month 9-12):

- Conduct usability tests with target user groups to ensure the larger pouches are practical and comfortable.
- Gather feedback to refine the design, focusing on ease of use and user satisfaction.
- Iterate on the design based on testing results to improve user experience.

Durability and Reusability Testing (Month 13-18):

- Test the pouches for repeated use cycles to ensure longevity.
- Conduct stress tests to evaluate the robustness of materials and construction.
- Optimize the design for maximum reusability, balancing durability and cost.

Milestones:

- Design and Engineering completed by Month 4
- Widget Development completed by Month 8
- Usability Testing completed by Month 12
- Durability and Reusability Testing completed by Month 18

3. Secondary Packaging Development

Objective: To create secondary **HYDRGEL** packaging that assists with squeezing the clean water from the pouch and includes personal carrying attachments.

Key Activities:

Concept Development (Month 1-2):

- Brainstorm and sketch initial concepts for secondary packaging.
- Consider various mechanisms such as levers or attachments for squeezing.
- Evaluate concepts based on feasibility, cost, and user needs.

Prototyping (Month 3-6):

- Develop prototypes of the secondary packaging based on selected concepts.
- Integrate personal carrying attachments like shoulder straps or belt connections.
- Ensure prototypes are practical, durable, and user-friendly.

Ergonomic Testing (Month 7-9):

- Conduct ergonomic tests to ensure the packaging is easy and comfortable to use.
- Gather user feedback to refine the design, focusing on comfort and usability.
- Iterate on the design based on testing results to enhance user experience.

Material Selection (Month 10-12):

- Choose durable and lightweight materials for the secondary packaging.
- Ensure materials are safe, non-toxic, and environmentally friendly.
- Test materials for durability and suitability in various climates.

Field Testing (Month 13-18):

- Deploy prototypes in real-world environments for feedback.
- Collect and analyze user data to optimize the design.
- Ensure secondary packaging meets all user needs and enhances the overall functionality of the **HYDRGEL** pouch.

Milestones:

- Concept Development completed by Month 2
- Prototyping completed by Month 6
- Ergonomic Testing completed by Month 9
- Material Selection completed by Month 12
- Field Testing completed by Month 18