

**二零二三年香港學生科學比賽**  
延伸摘要範本（發明品專案設計）  
(字數上限：2,500字, 頁數上限：3 頁)

隊伍號碼：

作品名稱：

參賽類別：發明品專案設計

就我們所知，坊間 有/沒有 類似的作品；（如有，）相關產品連結如下：

我們的作品所提出的改良 / 其不同之處為：

\*請刪去不適用。本比賽重視作品的原創性，學生須於開始研究或發明前作足夠的文獻搜索以確保自己的作品具一定獨特性並列出相關參考資料。

## I. 前言

- 介紹背景資料，以闡述專案對所關注受眾的了解
- 概述所參考的文獻及/或相關技術或設備的資料，並列出可靠的資料來源
- 撰寫作品概要，舉出要點以針對受眾的實際需要及關注，並陳述專案嘗試填補的研究或技術缺口

## II. 目標

- 列出專案的目的

## III. 研究方法

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- 列舉並概述試驗發明品可行性的方案，例如所需設備、材料、測試及相關的實驗
- 以科學理論支持所選用的實踐方法

#### IV. 發明品的設計

- 描述發明品的設計和原理（例如：描述項目的意念，或舉出不同的創意方案）
- 展示發明品的草圖或圖畫

#### V. 相關應用 / 市場需求

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- 解釋發明品的相關應用和功能
- 指出市場的需求和該發明品的潛在效益
- 討論有關限制，並就現有相關研究作對比（如有）

**VI.** 如發明品專案設計將角逐可持續發展大賞，請列明作品與哪一個可持續發展目標有關，並說明參與競逐此獎項的原因。(字數上限：500字)

**VII.** 如發明品專案設計將角逐社會創新大賞，請列明作品所針對的目標群組或社會議題，並說明參與競逐此獎項的原因。(字數上限：500字)

### **VIII. 結論**

- 撰寫專案結論及有關發明的後續安排

## Hong Kong Student Science Project Competition 2023

Template of Extended Abstract (Invention Design Proposal)

(Word Limit: 1,600 words, Pages: 3 pages only)

**Team Number: JBBC120**

**Project Title: Chemical Restructuring: Ameliorating and Refining Drainage Cleaners**

**Project Type: Invention Design Proposal**

*To our best knowledge, there are\* similar works in the market; (if there are, ) related product links are as below:*

<https://www.farcent.com.tw/products-main/CcCynbfSYAuPaSj0/258yn4FWY7yn3Uud>

**The enhancement our project proposed / the difference with related products are:**

**Accomplishes damage reduction, is eco-friendly, and still as practical and adequate as other cleaners.**

*\*Please delete if not applicable. The competition values the originality of works. Students must do enough literature research to ensure that their works are unique and list relevant reference materials before*

### **I. Background**

This project is ameliorated for household usage to enlarge the efficiency and reliability safety, also minimising the damage to human body. The drainage cleaner we'll create should have a lower corrosiveness to the pipes overall, practical measure their individual corrosiveness and effectiveness by verifying their pH scale and observe their solubility respectively. We've first tested and compared 5 common and saleable drainage cleaners and 2 frequently used chemicals in drainage cleaners. Then, select the one(s) that has the lowest corrosiveness and highest effectiveness. We will study the chemical substances used, then start mixing the chemical substances. We will test if these substances will cause undesirable chemical reactions, and find a way to forestall them from happening, or use another substance instead. Ultimately, we'll get the best formula and create a drainage cleaner that is highly productive and minimizes corrosiveness as much as possible.

### **II. Objective(s)**

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Our main objective is to investigate different types of drain cleaners and create a brand new type of drainage cleaner, that accomplishes damage reduction, is eco-friendly, and still as practical and adequate as other cleaners. To reach this goal, we will first retrieve data from drainage cleaners in the market, search for other chemical substances that cause less corrosion and damage, mix and match, and eventually create a new drainage cleaner.

### **III. Methodology**

We will compare 5 common and saleable drainage cleaners and 2 frequently used chemicals in drainage cleaners, measure their individual corrosiveness and effectiveness by verifying their pH scale and observe their solubility respectively.

1. Select the one that has the lowest corrosiveness and highest effectiveness.
2. We will study the chemical substances used, then start mixing the chemical substances.
3. We will test if these substances will cause undesirable chemical reactions, and find a way to forestall them from happening, or use another substance instead.
4. Ultimately, we'll get the best formula and create a drainage cleaner that is highly productive and minimizes corrosiveness as much as possible.

The scientific theory behind is combining a chemical way and a natural way by testing different materials and chemicals to find the best combination out which can be up to our standard.

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**IV. Design of Invention**

- The product we try to create is to accomplish damage reduction, is eco-friendly, and still as practical and adequate as other cleaners.

**V. Application / Market Need**

- Our invention can settle drainage clogging problem and is exquisite for household usages. Since our invention is less destructive and caustic than the referenced drainage cleaner. Also, our invention is more efficient than the referenced drainage cleaner. As some of the experiment failed, there are a few reasons and experimental limitations we considered that caused the results invalid.
  1. Not enough time for the enzymes to volatilize for enough function.
  2. Not enough enzymes needed to achieve the desired effect.
  3. Not enough volume of solutions to enlarge the effect.

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**VI. If your team will compete the Sustainable Development Award, please indicate the specific sustainable development goal the project is related to, and provide justification for competing for this award. (Word limit: 300 words)**

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**VII. If your team will compete the Social Innovation Award, please list the target group or social issue the project focuses on, and provide justification for competing for this award.**

**VIII. Conclusion**

The new product we will be manufacturing should be less destructive and caustic than the referenced drainage cleaner(s) about 50-65%. For efficiency, we looked forward to enhancing it by about 45-50%. By reconstituting the best amalgamation, we've hoped that the new drainage cleaner can be democratised, hypoallergenic and mild low-irritation. Although we tried to lessen the vandalism of the cleaner, a slight certain amount of defilement and defacement still exists.