



## 吳明蒼 教授

### 醫學院/環境職業醫學博士學位學程

- 設計簡易介入方法並提供科學證據，降低日常生活中三聚氰胺與塑化劑污染物的暴露。透過健康衛教的轉譯，讓更多人了解如何減少這些有害物質的影響，進一步改善食安環境，貢獻永續社會福祉。

2008 年的毒奶粉事件與 2011 年的塑化劑污染事件，讓人們對於食安問題產生高度關注。為了解決這些問題，研究團隊以科學證據為基礎，提供實際可行的兩大創新亮點：

1. **衛教介入降低塑化劑風險暴露：**針對塑化劑污染，研究團隊率先設立「兒童塑化劑特別諮詢門診」，對受影響兒童進行專業追蹤與衛生教育。研究顯示，介入後 2 個月和 6 個月，塑化劑 DEHP 的每日攝取量分別減少約 40% 與 73%。這項成果發表於《Environmental Science & Technology》(<https://doi.org/10.1021/es403141u>)；此外，在日常生活環境中，孩童使用肥皂加水洗手才能去除高達 95% 的塑化劑中 DEHP 暴露。這些簡單的日常防護方式，對於大眾減少環境毒害暴露具有顯著效果，因此在 2019 年獲得台灣食品安全及受害者權益促進協會的高度肯定，並成為南部唯一獲《功在



食安—食安貢獻獎》的案例。

2. **生活方式改變預防三聚氰胺毒害：**研究團隊率先發現美耐皿餐具在高溫下會釋出大量三聚氰胺，並且發現使用不銹鋼餐具替代美耐皿餐具，可以減少約 68% 的三聚氰胺暴露，這些成果刊登於《JAMA Internal Medicine》(<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1558449>) 以及《Environmental Science & Technology》(<https://doi.org/10.1021/acs.est.5b01965>)，並還被時代雜誌與美國化學學會專文報導，之後更被台北市環保局採納成為在美食街逐步淘汰美耐皿餐具政策推動實例。

研究團隊長期以來設計簡易介入方法並提供科學證據，降低日常生活中三聚氰胺與塑化劑污染物的暴露。透過健康衛教的轉譯，讓更多人了解如何減少這些有害物質的影響，進一步改善食安環境，貢獻永續社會福祉。

### 【具體成果】

1. **頂尖榮耀研究實力：**2021-2023 年全球前 2% 頂尖科學家，彰顯科研實力與創新表現。
2. **高被引用科研成果：**多篇學術論文獲得高引用，顯示科研成果受國際重視。  
([https://scholar.google.com/citations?hl=zh-TW&user=Muw42G0AAAAJ&view\\_op=list\\_work](https://scholar.google.com/citations?hl=zh-TW&user=Muw42G0AAAAJ&view_op=list_work))
3. **守護國人肺部健康：**以「以新穎簡易改良式油煙過濾桶減汙及降低國人潛在性肺腺癌的風險」獲「SNQ 國家品質標章」認證，並以領先國內之品質水準，授予「國家生技醫療品質獎」《銅獎》之殊榮。
4. **聯手 NASA 監測空品：**與 NASA 機構合作參與環境監測，推動南台灣精準空污治理，為環境永續貢獻力量。  
(<https://maia.jpl.nasa.gov/resources/science-team/>)
5. **培育高階研究人才：**培育高階人才吳佳芳博士，成為中研院環境變遷研究中心的助理研究員。  
([https://rcec.sinica.edu.tw/index\\_en.php?action=member&id=137](https://rcec.sinica.edu.tw/index_en.php?action=member&id=137))



6. **科普互動到研究啟蒙：致力推廣環境教育，透過「高中生科普互動活動」**(如「預防塑化人生」專題、NASA 儀器參訪等)，深化我國學生的科學素養與永續環境概念。
7. **環境永續與健康保障：以「以全民均健：解決生活環境塑化劑與三聚氰胺議題的永續社會行動與創新服務」**獲得「SNQ 國家品質標章」認證。  
([https://www.snq.org.tw/chinese/03\\_service/02\\_detail.php?pdid=7086](https://www.snq.org.tw/chinese/03_service/02_detail.php?pdid=7086))
8. **減塑防害護兒童：透過兒童塑化劑諮詢特別門診服務的介入措施，成功降低塑化劑與三聚氰胺的健康風險，為解決台灣重要的環境與健康議題提供創新解方。**此項成果於 2019 年獲得「台灣食品安全及受害者權益促進協會」推薦，榮獲《功在食安—食安貢獻獎》。
9. **獲得教育部研究中心補助：帶領高醫大環境職業健康科學家團隊，分別在 2018 年以及 2023 年以「環境醫學研究中心」和「精準環境醫學研究中心」**獲得教育部五年特色研究中心補助。
10. **從科研揭露真相：TVBS 新聞報導「塑毒之害」以及美耐皿餐具潛在危險，專訪我們研究團隊，不僅深入解析 2011 年塑化劑污染事件以及三聚氰胺相關研究，詳實揭露塑化劑以及三聚氰胺對健康的危害，增進大眾對此議題的認識，而且也肯定我們團隊的研究努力成果，回饋社會**(<https://youtu.be/BJJCU6ZWV1g>，從 4 分鐘開始，<https://www.youtube.com/watch?v=tm05u71Ukw8>)。







## 【研究團隊】

團隊成員：

1. 吳明蒼 (<https://tmicsgroup.wixsite.com/ming>)
2. 台灣婦幼世代研究團隊 (<https://tmics.shinyapps.io/goodlife/>)，並已加入國衛院國家環境醫學研究所主導的「臺灣兒童與家庭世代研究」(Taiwan longitudinal cohort study of Children And Families, TCAF) 計畫，成為台灣最大婦幼健康世代研究，日後提供政府科學實證建言。
3. Robert Turesky (<https://www.pharmacy.umn.edu/our-faculty-staff/our-faculty/robert-turesky>)

團隊簡介:研究團隊致力於研究環境與職業暴露、遺傳因子及生物標誌物對健康的影響，同時推動臨床轉譯研究。核心方向涵蓋基因與環境交互作用以及新興環境健康議題的探索，旨在提升健康並推動環境醫學永續發展

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The 2008 melamine-tainted baby formula incident and the 2011 phthalates-tainted food scandal incident raised significant public concern about food safety. To address these concerns, our research team provided two major innovative solutions based on scientific evidence:

1. **Health Education Interventions to Reduce Phthalate Risk Exposure:** In response to phthalates-tainted food scandal, we immediately assembled the multi-disciplinary scientists and pioneered the establishment of a "Special Consultation Clinic for Children's Phthalates" to provide professional follow-up and health education to affected children and their main-care givers. Our research results showed that two and six months after the intervention, the daily intake of DEHP (Di(2-ethylhexyl)phthalate, a type of phthalates) decreased by approximately 40% and 73%, respectively. This achievement was published in the *Environmental Science & Technology* (<https://doi.org/10.1021/es403141u>). In addition, our research team found that to use soap and water, instead of water only,



to wash hands in daily life can remove up to 95% of DEHP exposure. These simple daily protective measures have a significant effect on reducing environmental phthalate toxic exposure for the public. Thus, we received high praise of "Contribution to Food Safety Award" in 2019 from the Taiwan Food Safety and Victims' Rights Promotion Association, which was the only one research group to receive this distinguished award in the southern Taiwan.

2. **Lifestyle Changes to Prevent Melamine Toxic Exposure:** My research team firstly found that melamine-made tableware can migrate a substantial amount of melamine chemicals in the high temperature. Using stainless steel containers to replace melamine-made tableware can reduce melamine exposure by approximately 68% in our everyday life. The scientific results were published in both *JAMA Internal Medicine*

(<https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/1558449>) and *Environmental Science & Technology*

(<https://doi.org/10.1021/acs.est.5b01965>) and reported by "Time"

magazine and posted on the official website of American Chemical Society. Later, the Taipei City Environmental Protection Bureau adopted our research findings to phase-out melamine-made tableware in the food court and become the policy.

For years, my research team has designed simple intervention methods and provided scientific evidence to reduce toxic exposure to melamine and phthalates in daily life. Through the translation of health education, more people are learning how to minimize the impact of these harmful substances, thereby improving food safety and contributing to sustainable social welfare.

#### 【Concrete Results】

1. **World' s Top 2% Scientists 2021-2023.**
2. **Highly Cited Research Contributions:** Numerous academic papers have received high citations, demonstrating the international recognition of the research outcomes. (For the list of highly cited papers, please visit:



[Google Scholar Profile]( [https://scholar.google.com/citations?hl=zh-TW&user=Muw42G0AAAAJ&view\\_op=list\\_work](https://scholar.google.com/citations?hl=zh-TW&user=Muw42G0AAAAJ&view_op=list_work) ).

3. **Safeguard Lung Health:** "An Innovative and Simplified Oil Fume Filter: Reducing Pollution and Lowering the Risk of Lung Adenocarcinoma Among the Population" was honored with the SNQ National Quality Certification and awarded the Bronze Prize at the National Biotechnology and Medical Care Quality Awards for its outstanding contribution to reducing pollution and mitigating the risk of lung adenocarcinoma.
4. **International Cooperation:** Collaborate with a distinguished scientist, Dr. David Diner, in NASA on Air Quality Monitoring: Partnered with NASA in environmental monitoring efforts, promoting precise air pollution control in southern Taiwan and contributing to environmental sustainability. ([NASA Science Team] ( <https://maia.jpl.nasa.gov/resources/science-team/> ))
5. **Cultivate young talent:** Train KMU' s doctoral student, Dr. Chia-Fang Wu, to become an assistant fellow in the Research Center for Environmental Changes, Academia Sinica.  
([https://rcec.sinica.edu.tw/index\\_en.php?action=member&id=137](https://rcec.sinica.edu.tw/index_en.php?action=member&id=137) )
6. **Science Popularization and Research Inspiration:** Committed to promoting environmental education, organizing "High School Science Outreach Activities" (such as the "Preventing Plasticized Lives" and NASA instrument tours) to enhance students' scientific literacy and awareness of sustainable environmental concepts in Taiwan. **Environmental Sustainability and Health Protection:** The initiative "Universal Health for All: Sustainable Social Actions and Innovative Services Addressing Phthalates and Melamine in the Living Environment" was awarded the "SNQ National Quality Mark" certification.  
( [https://www.snq.org.tw/chinese/03\\_service/02\\_detail.php?pdid=7086](https://www.snq.org.tw/chinese/03_service/02_detail.php?pdid=7086) )
7. **Plastic Reduction and Child Protection:** Through the intervention of a special consultation service for children's phthalates, we successfully reduced the health risks associated with phthalates and melamine. This



innovative solution to Taiwan's significant environmental and health issues earned a recommendation from the Taiwan Food Safety and Victims' Rights Promotion Association in 2019 and was awarded the "Contribution to Food Safety Award" in the "Food Safety Achievement" category.

8. **Receiving Central Grant from Ministry of Education:** Using the Center titles of "Research Center for Environmental Medicine" and "Research Center for Precision Environmental Medicine", I led the scientists from Kaohsiung Medical University and other institutes to win the central grants twice from Taiwan's Ministry of Education in 2018 and 2023.
9. **Unveiling the Truth through Research:** TVBS News aired special reports titled "The Harm of Plastic Toxins," featuring an interview with our research team. The report not only provided an in-depth analysis of the 2011 phthalates contamination incident as well as the concerns of melamine-made tableware, thoroughly revealing the health dangers of phthalates and melamine and enhancing public awareness of the issue, but also recognized the achievement of our research team. ( <https://youtu.be/BJJCU6ZWVlg> , starting at 4 minutes; <https://www.youtube.com/watch?v=tm05u71Ukw8>).

#### 【Research Team】

Team Members:

1. Ming-Tsang Wu (<https://tmicsgroup.wixsite.com/ming>)
2. The Taiwan Maternal and Infant Cohort Study (TMICS) team ( <https://tmics.shinyapps.io/goodlife/> ) has officially joined the Taiwan Longitudinal Cohort Study of Children and Families (TCAF), led by the National Institute of Environmental Health Sciences at the National Health Research Institutes, Taiwan. As the largest maternal and child health cohort study in Taiwan, TMICS aims to provide evidence-based recommendations to the government, contributing to the advancement of public health policies.
3. Robert Turesky ( <https://www.pharmacy.umn.edu/our-faculty-staff/our-faculty/robert-turesky> )



**Research Team Introduction:** The research team is dedicated to studying the impact of environmental and occupational exposures, genetic factors, and biomarkers on health impact. The anticipated findings can be translated to social contribution and policy implementation.

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