

## UGM Lecturer Develops Eco-Friendly Patchouli Oil Processing

Monday, 10 September 2018 WIB, By: Marwati

---




UGM Department of Chemistry lecturer, Prof. Drs. Karna Wijaya, M.Eng., Dr. rer.nat., has initiated the Green Chemistry Community Empowerment consisting of five Chemistry students in transferring technology of patchouli oil processing to SMEs in Samigaluh, Kulonprogo regency.

The idea was sparked after they observed the national patchouli oil SMEs players in green chemistry or green chemical process of patchouli oil processing. "Their understanding in patchouli oil processing is still limited or far from the expectations of researchers and policy makers," said Prof. Karna, Monday (9/10).

He explained the use of patchouli leaf distiller from iron drums by SMEs players caused rusts to contaminate the oil which led to high acidity. According to the expert, it was an example of the non-eco friendly process.

Moreover, the color of patchouli oil produced was dark and it did not meet the quality requirements of the Indonesian National Standard. "One of the main causes is the lack of sustainable education system on green chemistry among green chemistry activists, both on and off campus."



He then defined the concept of Education for Sustainable Development (ESD) which was initiated by Prof. Dr. Hans J.A. Van Ginkel, former Rector of United Nations University, and is often adapted to educate green chemistry activists at Chemistry UGM. This was the knowledge that he implemented to Patchouli Oil SMEs in Kulonprogo.

The green process, Karna continued, was distillation using an energy-efficient distiller that can save time up to 33,3 percent and fuel costs by 35,5 percent. Additionally, the distiller was also equipped with patchouli oil purification technology using bentonite-CaO adsorbent.

“Sustainable education on green chemistry among activists will be effective if implemented according to the ESD rules. The rules are the development of academic and leadership capacity, education to respect the rights of others and nature, as well as training to responsibly make decisions.”

Prof. Karna Wijaya was assisted by two other lecturers, Nasih Widya Yowono, Soil Science lecturer, and Mokhammad Fajar Pradipta, Chemistry lecturer. Moreover, two students also helped him, namely Farida and Widi Kurniawati. Four institutions involved in the program are Chemistry and Physics Laboratory UGM, SME Surya Wulan, CV Fruitanol Energy, and Village Board of Gerbosari.

“For its funding, this program utilizes program implementation grants of the 2018 Education for Sustainability Development in Community organized by the Community Service Directorate, LPPM UGM.”

The development of this program’s education system was based on four main pillars of ESD, including social, cultural, economic, and environmental. The four pillars must be explicitly stated in the module of the green chemistry education system. Each set of targets contributed to the achievement of Sustainable Development Goals (SDGs).

Karna hoped the establishment of Green Chemistry Community at Department of Chemistry UGM would bring many positive impacts on education and efforts to improve the community welfare.

“Additionally, the formation of empowerment-oriented Academic-Business Government networks will further strengthen our program’s vision and mission to participate in efforts to achieve the SDGs,” he concluded.

---

## Related News

- [UGM Researchers Increase Patchouli Essential Oil Production in Kulonprogo](#)
- [E-Dom, Eco-friendly Wallet Created by UGM Students](#)
- [UGM Develops Patchouli Oil Distiller](#)
- [Gold Processing with Borax Produces More Gold and is Environmentally Friendly](#)
- [UGM Develops Bioceramics Minifactory](#)