**PATENT DRAFT: ERADICATING MOSQUITOES FOR A SAFER AND HEALTHIER COMMUNITY**

**Title:**

An Advanced Mosquito Eradication System Using Electrified Grid, UV Light, and CO₂-Based Attractant Paste

**Abstract:**

This invention relates to a highly efficient mosquito eradication system that utilizes a combination of an electrified grid, UV light, and a biochemically engineered attractant paste to lure and eliminate mosquitoes. The system features an optimized high-voltage circuit, a solar-powered rechargeable battery, and a safe, enclosed design to ensure effective and continuous mosquito control. The attractant paste mimics human breath and sweat by generating controlled CO₂ release using a blend of yeast fermentation, chemical reactions, and oxidation processes. Additionally, the system incorporates a high-frequency flyback transformer circuit to generate 3-10kV for mosquito elimination, ensuring safety and efficiency. The model is designed for sustainable, non-toxic mosquito eradication with minimal maintenance, making it suitable for urban and rural areas.

**Background & Problem Statement:**

Mosquito-borne diseases like malaria, dengue, and Zika virus pose serious global health threats. Conventional mosquito control methods, such as insecticides and repellents, have environmental concerns, health risks, and reduced effectiveness due to mosquito resistance. There is a pressing need for a sustainable, chemical-free, and highly effective mosquito control solution that ensures continuous mosquito eradication without harming the ecosystem.

***Technical Description & Working Mechanism:***

1. Mosquito Attraction System:

* 365nm UV LED Light: Scientifically proven to attract mosquitoes by mimicking natural light sources.
* Biochemical Attractant Paste: Formulated with CO₂-generating agents (yeast, CaO, KMnO₄, carbon dust) along with lactic acid, octenol, and protein sources to mimic human body odor and breath.

Attractant Paste Composition & Working Principle:

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| **Ingredient** | **Quantity (Per Batch)** | **Purpose & Functionality** |
| Cornstarch / Gelatin | 100 g | Forms the base; retains moisture and ensures slow release of attractants. |
| Corn Syrup / Sugar | 50 g | Acts as a nutrient source for yeast fermentation, supporting CO₂ production. |
| Honey (Raw) | 50 g | Enhances stickiness and prolongs the attractiveness of the paste. |
| Glycerin | 30 mL | Retains moisture, preventing the paste from drying out too quickly. |
| Distilled Water | ~200 mL\* | Adjusts consistency to ensure proper application and release of attractants. |
| Yeast (Active Dry) | 5 g | Ferments sugar to produce CO₂, mimicking human respiration. |
| Blood Meal / Casein | 20 g | Provides protein odor, simulating human sweat to attract mosquitoes. |
| Baking Soda (NaHCO₃) | 10 g | Reacts with citric acid to release CO₂. |
| Powdered Citric Acid | 10 g | Facilitates controlled CO₂ generation when mixed with baking soda. |
| Powdered Carbon Dioxide (CO₂) | 10 g | Supplies additional CO₂ for sustained mosquito attraction. |
| Lactic Acid | 10 mL | Mimics human sweat and enhances mosquito attraction. |
| Octenol (1-octen-3-ol) | 5 mL | A potent attractant found in human breath and sweat. |
| Hexanal | 5 mL | Simulates natural human body odor to attract mosquitoes. |
| Ethanol | 10 mL | Enhances the evaporation of attractant compounds for long-range effectiveness. |
| Calcium Oxide (CaO, Quicklime) | 10 g | Reacts with water to slowly release CO₂, ensuring long-term attraction. |
| Carbon Dust (Activated Carbon/Charcoal Powder) | 5 g | Enhances slow CO₂ release and helps stabilize the attractant. |
| Potassium Permanganate (KMnO₄) | 2 g | Oxidizes carbon dust to generate additional CO₂ over time. |

2. High-Voltage Mosquito Elimination Circuit:

* Power Source: 12V Li-ion rechargeable battery (solar and external charging supported).
* Oscillator & Switching Circuit: NE555 Timer + IRF540N MOSFET to drive a high-frequency flyback transformer.
* Flyback Transformer & Voltage Multiplier: Steps up voltage to 3-10kV, stored in high-voltage capacitors (100nF–1µF, 10kV-rated).
* Electrified Grid: Two closely spaced stainless steel meshes (1-2mm gap) charged with high-voltage DC, instantly electrocuting mosquitoes upon contact.
* Safety Features: Fuse protection, insulated casing, and an enclosed structure to prevent accidental human contact.

**Electronic Component List:**

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| **Component** | **Specification** |
| 12V 3Ah Li-ion Battery Pack | Rechargeable power source |
| TP4056 Charging Module | For battery recharging (solar or DC adapter) |
| 3A, 250V Fuse | Overcurrent protection |
| NE555 Timer IC | Generates 20-50kHz oscillations |
| IRF540N MOSFET | High-speed switching for transformer control |
| 10kΩ, 1kΩ, 100Ω Resistors | Used in oscillator and MOSFET circuits |
| 1µF, 0.1µF Capacitors | For circuit stability |
| Flyback Transformer | Steps up voltage to 3-10kV |
| 2CL77 High-Voltage Diodes (10kV-rated) | For voltage rectification |
| 100nF, 1µF Capacitors (10kV-rated) | Energy storage and boosting |
| 10MΩ, 10W Resistor | Current limiting for safety |
| 365nm UV LED, 5W | Mosquito attraction |
| 330Ω Resistor | UV LED current limiting |
| Electrified Mesh Grid | 1-2mm spacing, stainless steel |

**Claims (Patentable Features):**

1. A mosquito eradication system that integrates UV light, an electrified grid, and a biochemical attractant paste for maximum effectiveness.
2. A biochemically engineered paste containing CO₂-generating agents (CaO, KMnO₄, carbon dust, yeast fermentation) and sweat-mimicking compounds (lactic acid, octenol, casein, etc.).
3. A high-voltage mosquito zapper circuit using an NE555 timer-driven MOSFET switch and a flyback transformer to generate lethal voltage.
4. A dual power system supporting solar charging and external DC charging, ensuring continuous operation in any environment.
5. A safety-enhanced electrified grid system, enclosed to prevent accidental human contact while maintaining high mosquito capture rates.
6. A long-lasting, low-maintenance system requiring only periodic attractant paste replacement and minimal grid cleaning.

**Conclusion:**

This invention provides a highly effective, chemical-free, and sustainable mosquito eradication solution. By integrating multiple mosquito attraction methods (UV light, CO₂-based attractant, human sweat mimicry) with a high-voltage electrified grid, this model offers a scientifically optimized approach to controlling mosquito populations in homes, outdoor areas, and malaria-prone regions. The inclusion of solar and rechargeable battery support ensures long-term functionality with minimal maintenance. This innovation provides a cost-effective and scalable approach to mosquito control, ideal for deployment in various environments.