

Glowing Evidence:  
Photographs Charting the  
Movement and Settling of Pesticides  
By Laurie Tümer

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Presented at the New-CUE  
— Nature and Environmental Writers, College and University Educators —  
Fifth Environmental Writers' Conference  
In Honor of Rachel Carson  
Booth Harbor, Maine, 10-13 June 2008

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*Glowing Evidence*

Photographs Charting the Movement and Settling of Pesticides

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...Producing organically is economically viable for struggling farmers, and it's environmentally essential, so this is the future. The question is no longer whether "organic" will become the major force in the food economy, but rather what it means to say "organic" - and who will control it.

While the big boys can't kill the movement, they are working mightily to co-opt it...

Jim Hightower

The world we have made, as a result of the level of thinking we have done thus far, creates problems we cannot solve at the same level of thinking at which we created them.

Albert Einstein

## **MSC = Multiple Chemical Sensitivity AKA Environmental Illness**

Remains a silent epidemic because of the political and medical divisiveness over the illness.

**What is it?** Toxic reactions (acute to minimal) to often minute amounts of synthesized chemicals at exposure levels thought to be safe (from pesticides, industrial pollutants, gasoline, artificial and “natural” fragrances, plastics, polluted air, mold, food, and to water, etc.) reported by approximately 16% of the population.

**What causes it?** Genetic factors, reduced detoxification abilities, enzyme deficiencies, predisposition to allergies, nutrient-depleted food, hormone imbalances, presence of other illness(es). “Body Burden” is a term used to explain the chemical accumulation. Developing MCS can be due to a single or cumulative exposure(s).

**Treatment?** There is no cure. People can recover to varying degrees. Some treatments help such as eating organic food, taking specific vitamins, detoxification procedures, etc. However, most have found avoiding or limiting of the specific exposure of this substance to be the most effective.

### **Cause to Hope?**

Those with MCS are like our “canaries in the mine” - our casualties of progress. People are learning from people with MCS that many products commonly used today are not safe and it furthers the environmental awareness taking place today. As these chemicals are more widely linked to cancer, learning disabilities, asthma, Parkinson’s Disease, Chronic Fatigue Syndrome, and Multiple Sclerosis, MCS is being taken more seriously than ever before.

## GLOWING EVIDENCE OF PESTICIDE EXPOSURE

The farmworker had already taken required pesticide applicator training courses. But stepping under Dr. Richard Fenske's black light dramatically showed him what no amount of classroom training could—how much exposure he gets from his own application techniques. His hands, neck, and ears glowed an eerie blue, highlighting skin that had been exposed to pesticides. Heavy splashes and spills glowed as hot spots.

Dr. Fenske hopes the blacklight reality check will lead this farmworker and others to use safer methods when they mix and apply pesticides.

Dr. Fenske, director of the Pacific Northwest Agricultural Safety and Health Center, first used the fluorescent tracer technique about 20 years ago. The technique is so simple it can be used in developing countries or rural work sites. A nontoxic fluorescent chemical is added to the pesticide mixing tank. After a day's work, investigators shine long-wave ultraviolet light onto the worker's skin to illuminate dermal exposures to the pesticide.

Long-wave ultraviolet light isn't the type that causes sunburn, but it makes fluorescent materials glow in the dark. The dermal exposure route has been recognized for decades to be a major pathway for pesticides to enter the bodies of farmworkers.

The Pacific Northwest Center is developing a trainers' manual directed at professionals such as agricultural extension agents and enforcement staff. Myron Shenk, pesticide extension agent with Oregon State University in Corvallis, uses a classroom version of the tracer technique in his pesticide applicator training and

certification courses, which he says is "extremely effective" as a teaching tool. Shenk coats an apple with a thin residue of fluorescent tracer, passes the apple around the room, then illuminates the hands of trainees with the black light. Their reaction is often one of surprise, he says.

Dr. Fenske and Dr. Matt Keifer of the Occupational and Environmental Medicine program traveled to Vietnam in March to teach a five-day course on prevention of pesticide poisoning for that country's National Institute for Occupational and Environmental Health. Most of the 30 students were preventive medicine physicians from provinces throughout northern Vietnam.

This spring, Dr. Fenske and Project Coordinator Emily Allen launched a study of licensed pesticide applicators who work with turf and ornamental plants in the Puget Sound area. They will survey workers before and after the fluorescent demonstration to test their knowledge, attitudes, beliefs, and practices related to chemical exposure and protective clothing. At the end of the growing season, a follow-up questionnaire will determine any sustained changes in workers' attitudes, beliefs, or practices.

Responses to the follow-up questionnaire will be compared with the baseline test to determine the impact of the teaching technique. "We have found that the tracer technique can be a powerful educational tool, and that it is well received by applicators, extension agents, and growers," Dr. Fenske said. "Where we have demonstrated the technique, we have seen a lot of enthusiasm for it."

*This farmworker was using personal protective equipment (hat, goggles, respirator), yet the ultraviolet photograph at the right shows skin that was exposed to pesticides*



*Richard Fenske, Courtesy of the Pacific Northwest Agricultural Safety and Health Center*

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## Education

1970 BA Stanford University (History)

1972 MA Columbia University (Comparative Religion)

1976 MA University of California, Berkeley (Geography)

1978 MPH University of California, Berkeley (Environmental Health Sciences)

1984 PhD University of California, Berkeley (Environmental Health Sciences)H

## Research Interests

**Exposure assessment, agricultural health and safety, pesticide exposure, children's health, organic food vs. conventional food (particularly for children)**



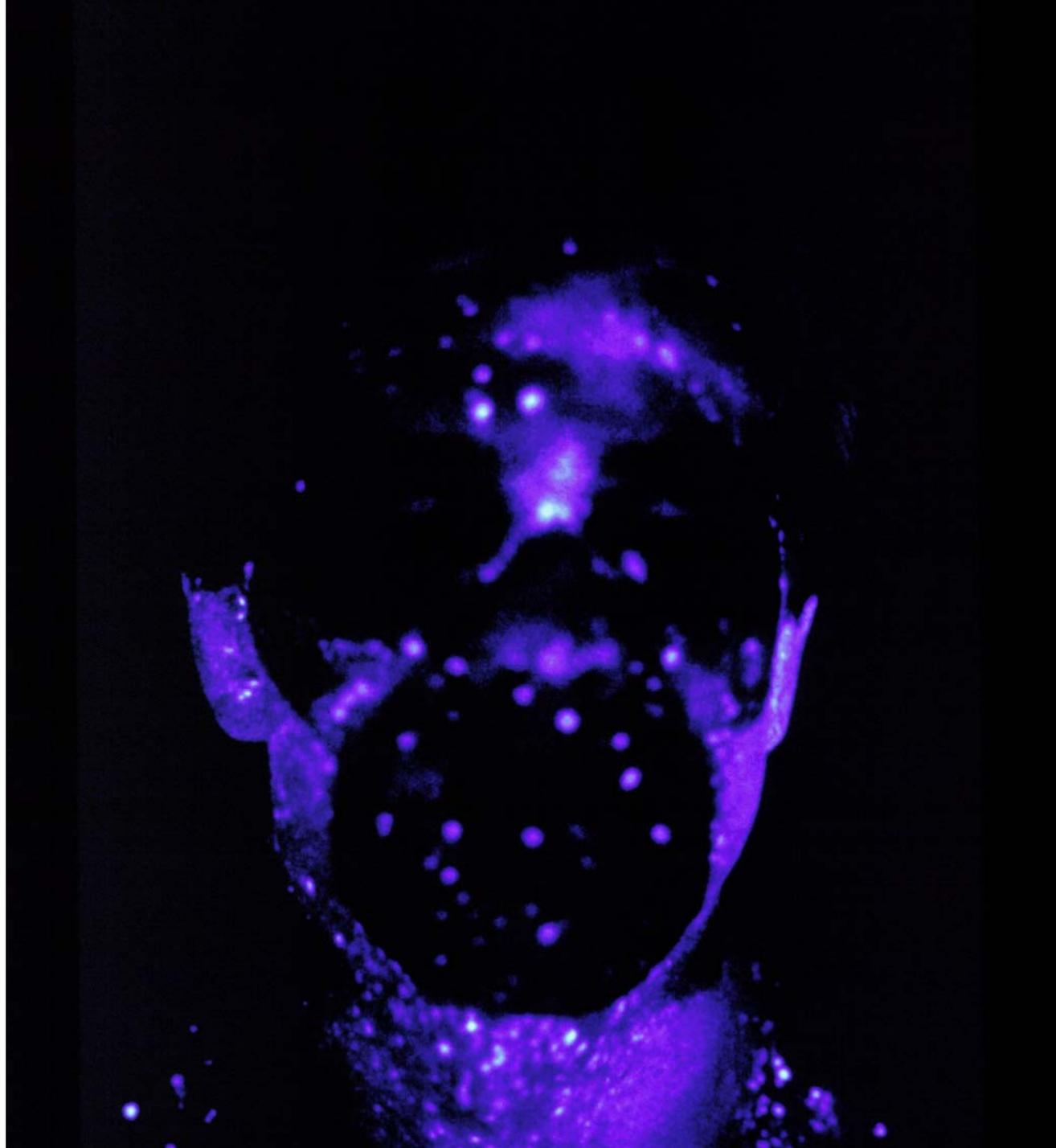
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and Photographer, Richard Fenske.**



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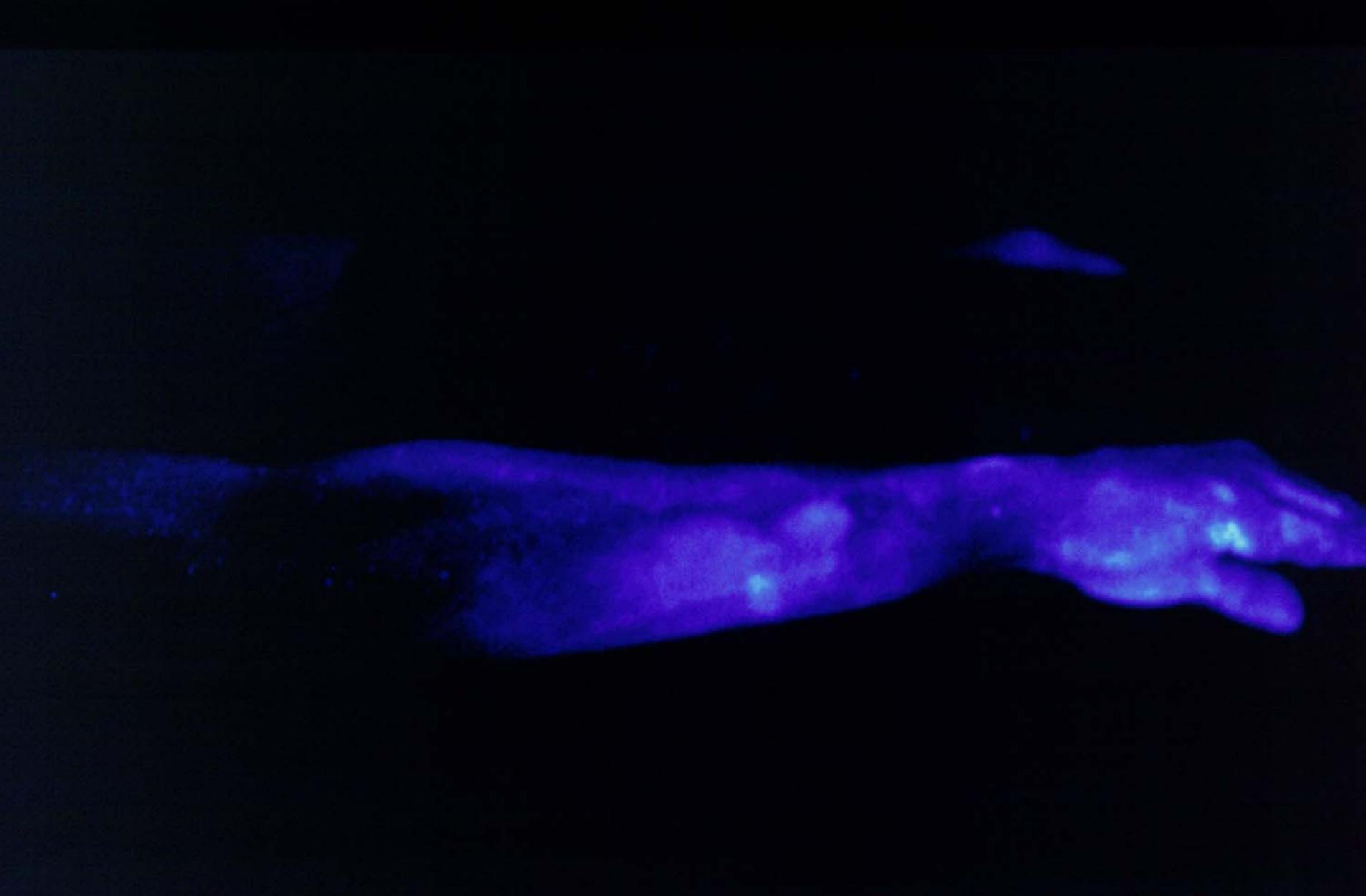


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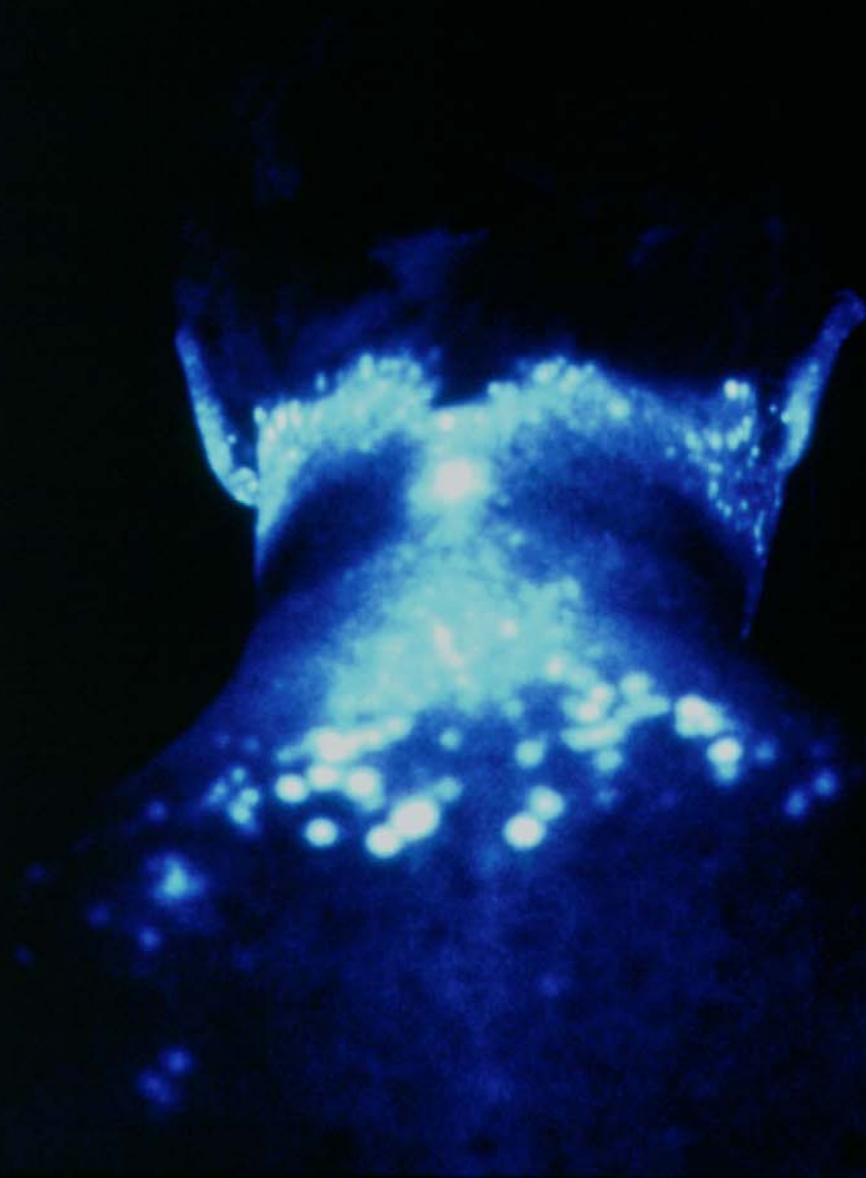
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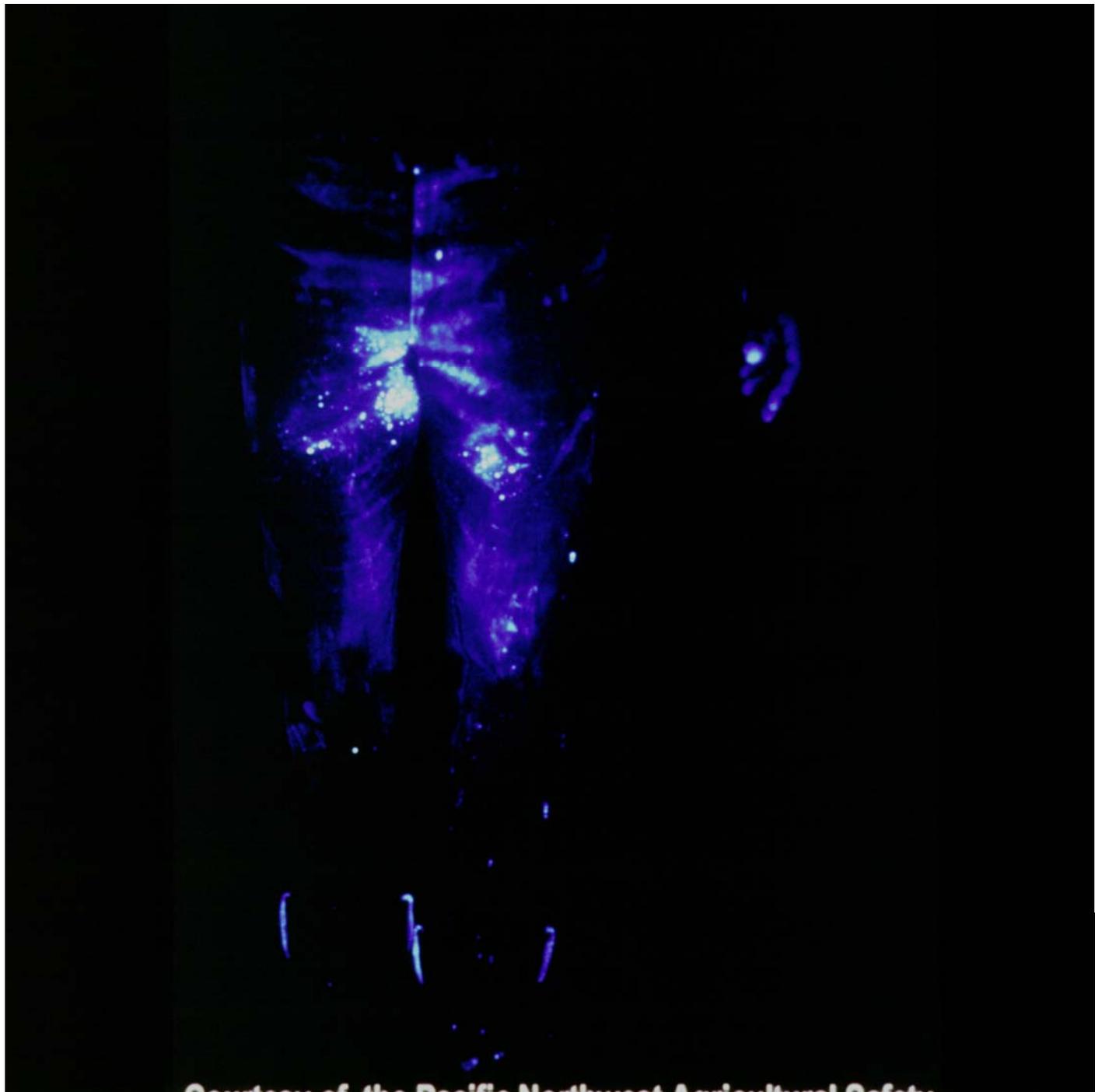


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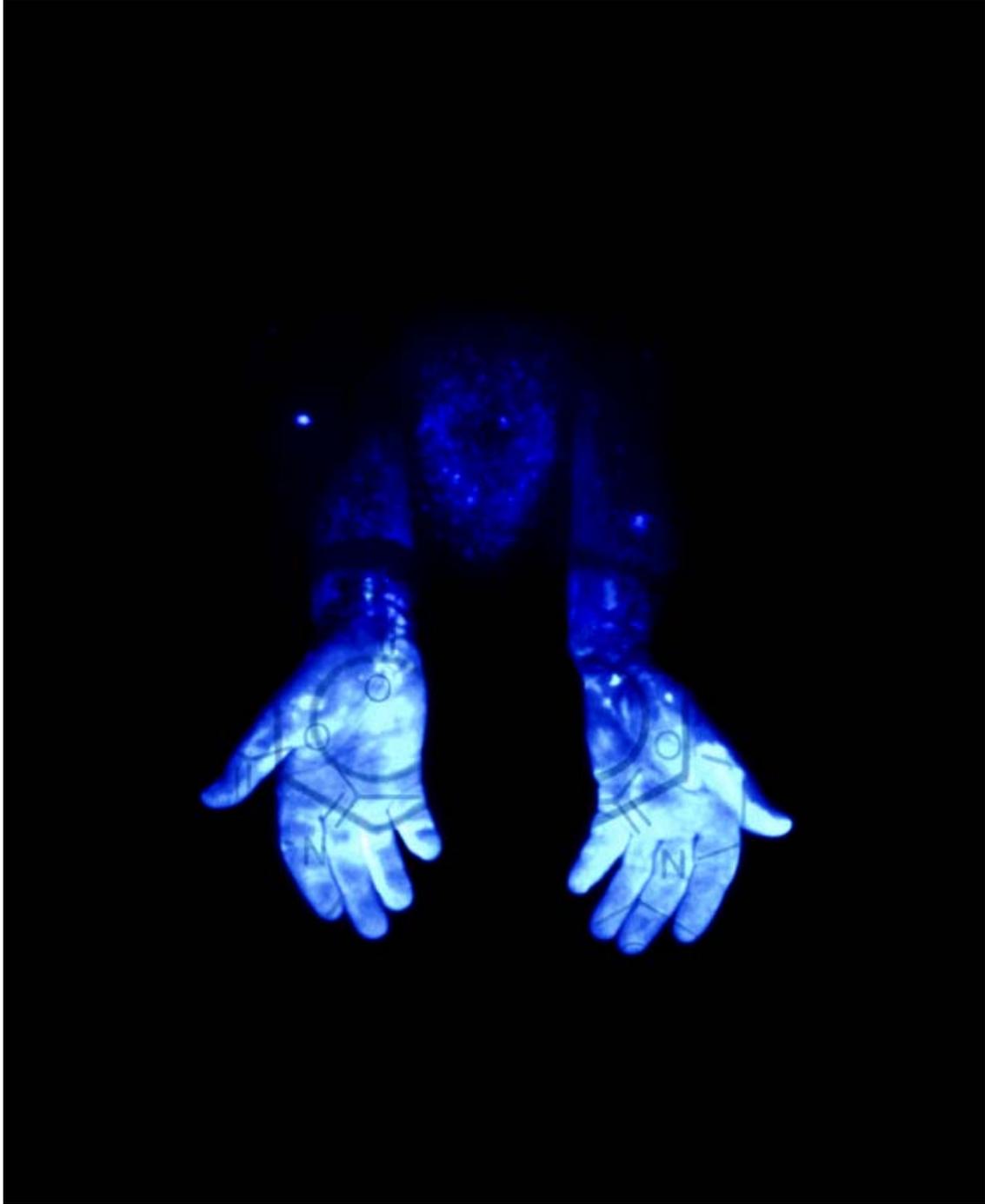




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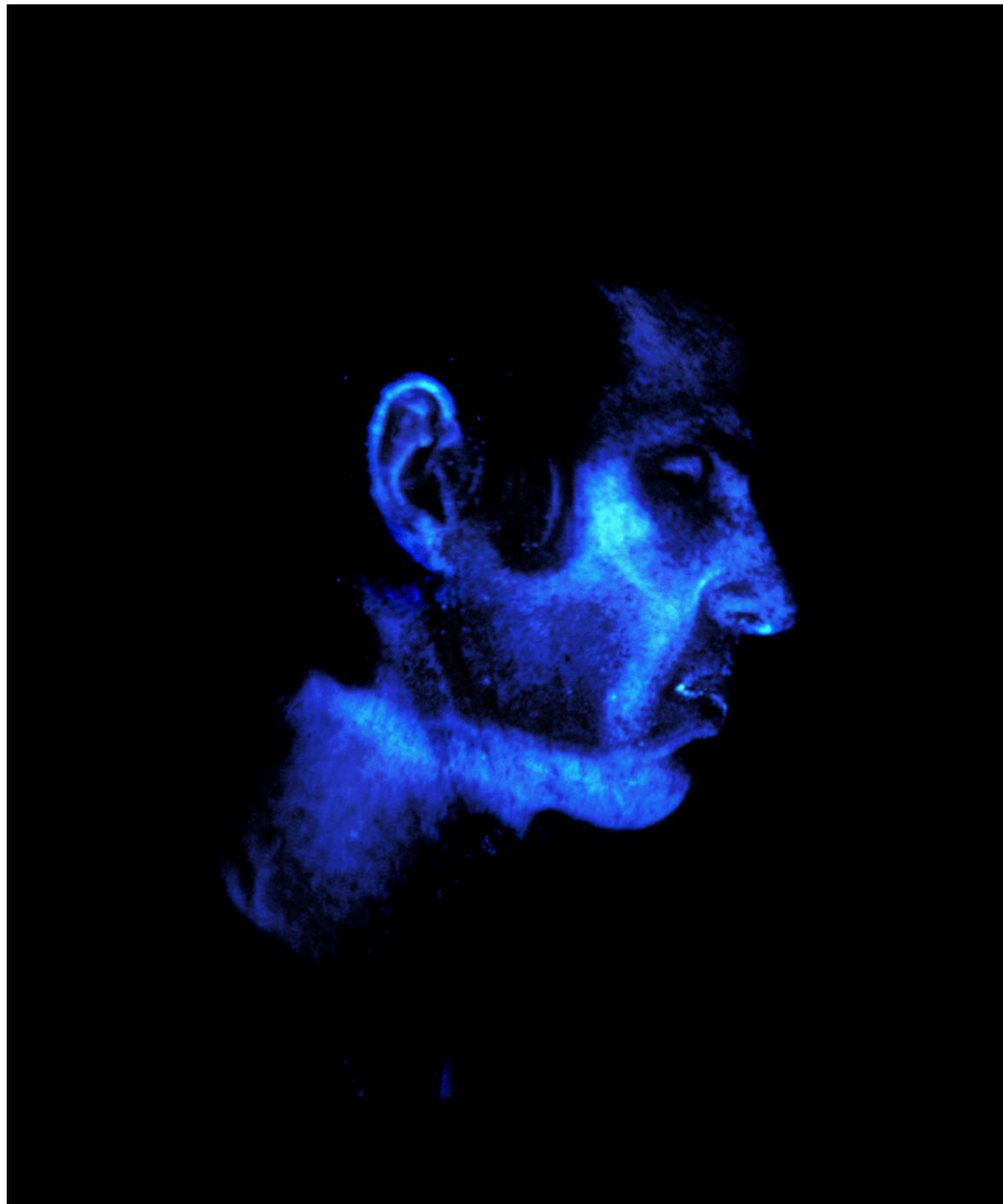
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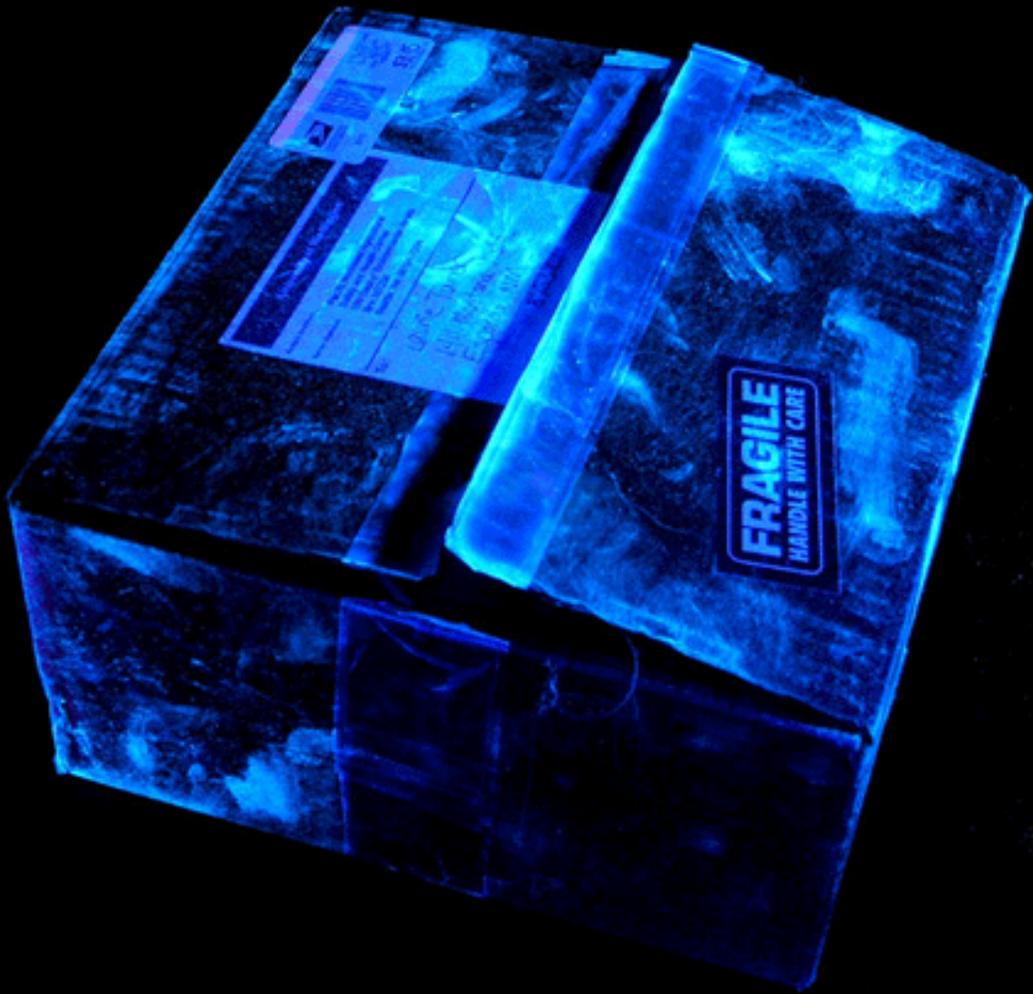








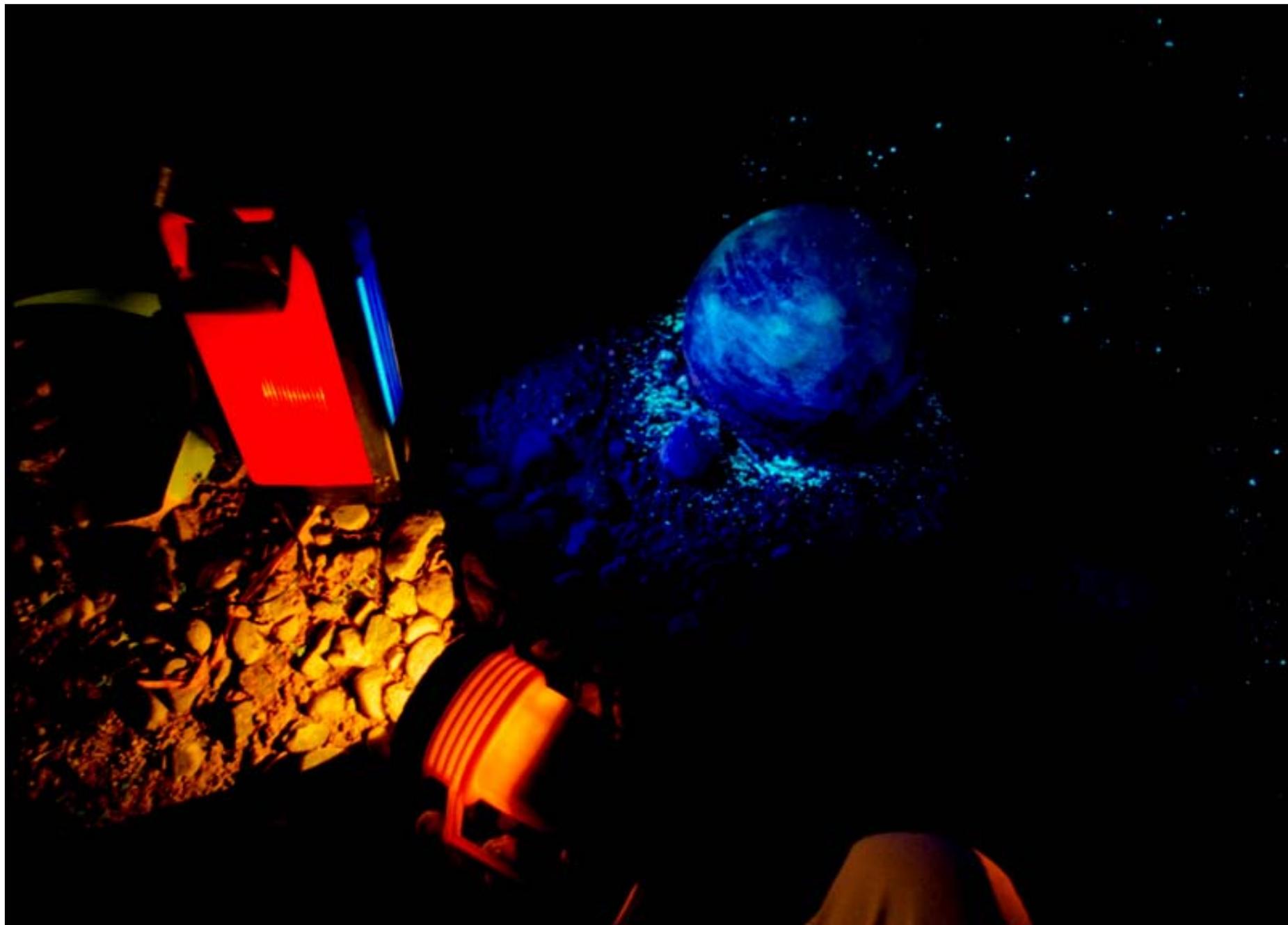






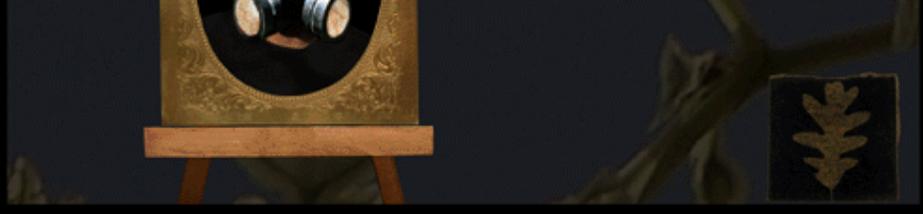


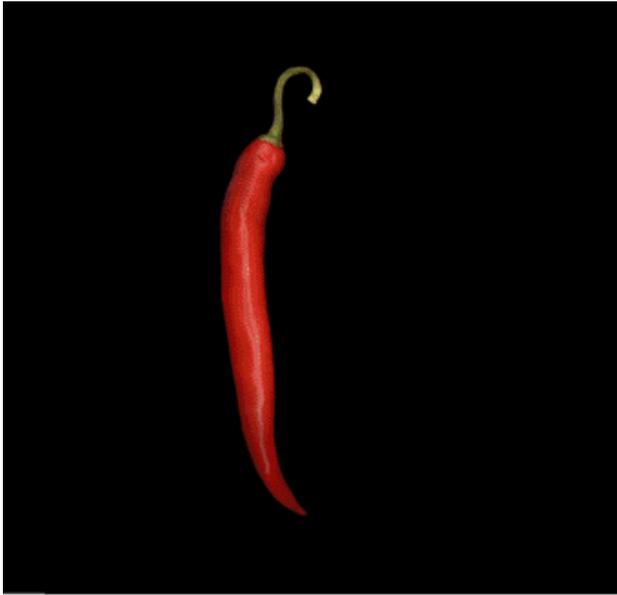




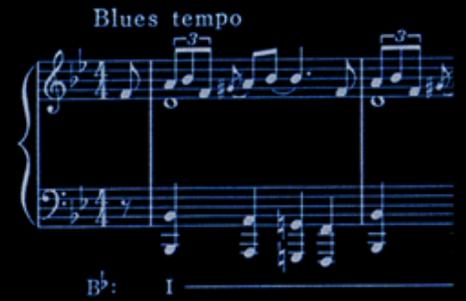
*In 1995, pesticide exposures contributed to an average of 4,200 hospitalizations, 15,000 health care visits, and over 56,000 visits to poison control center annually....*

Human and Veterinary Toxicology

















...I photograph to find out what something will look like  
photographed.

Gary Winogrand



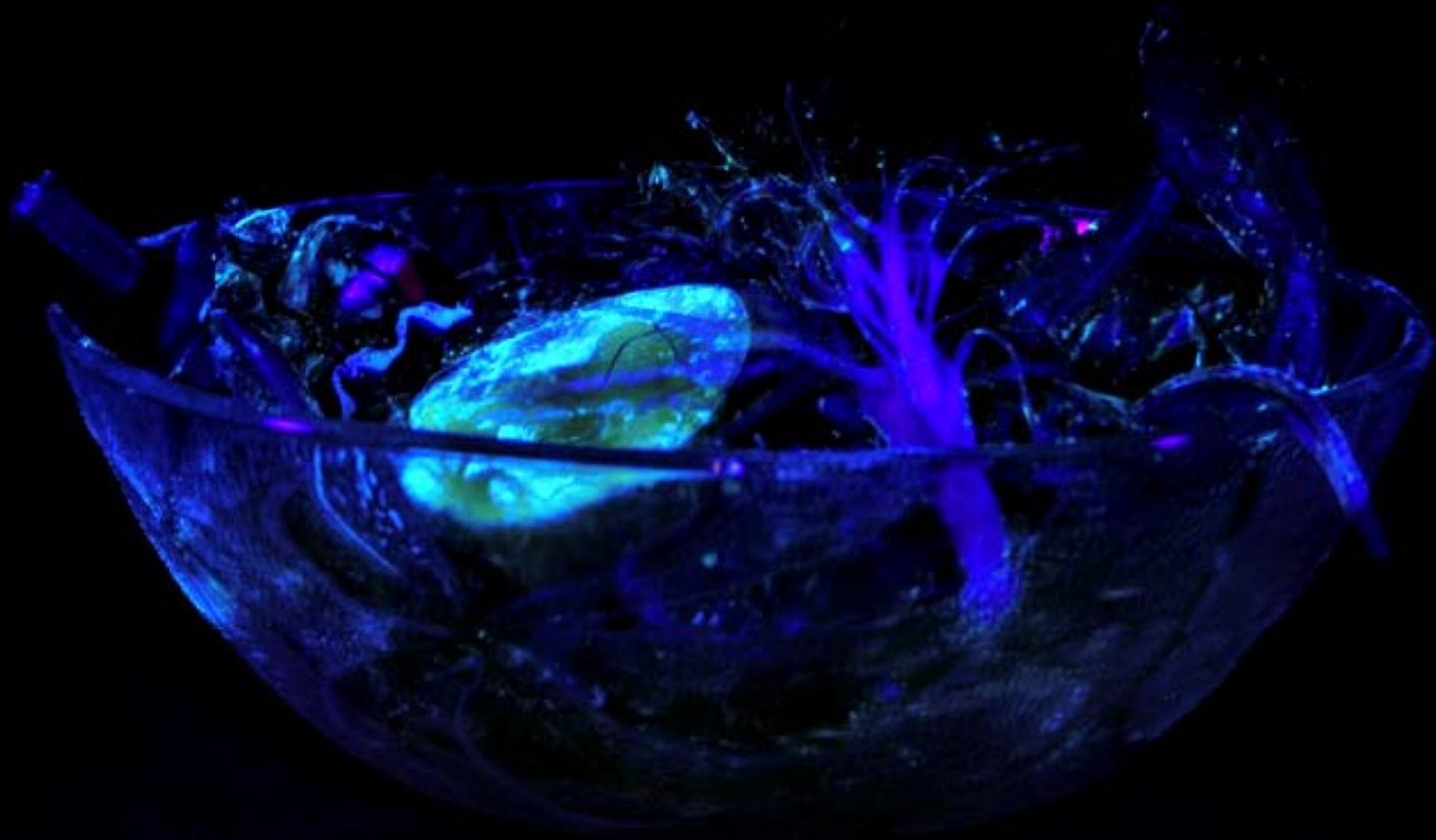






...the common salad bowl may easily present a combination of organic phosphate insecticides...

Rachel Carson



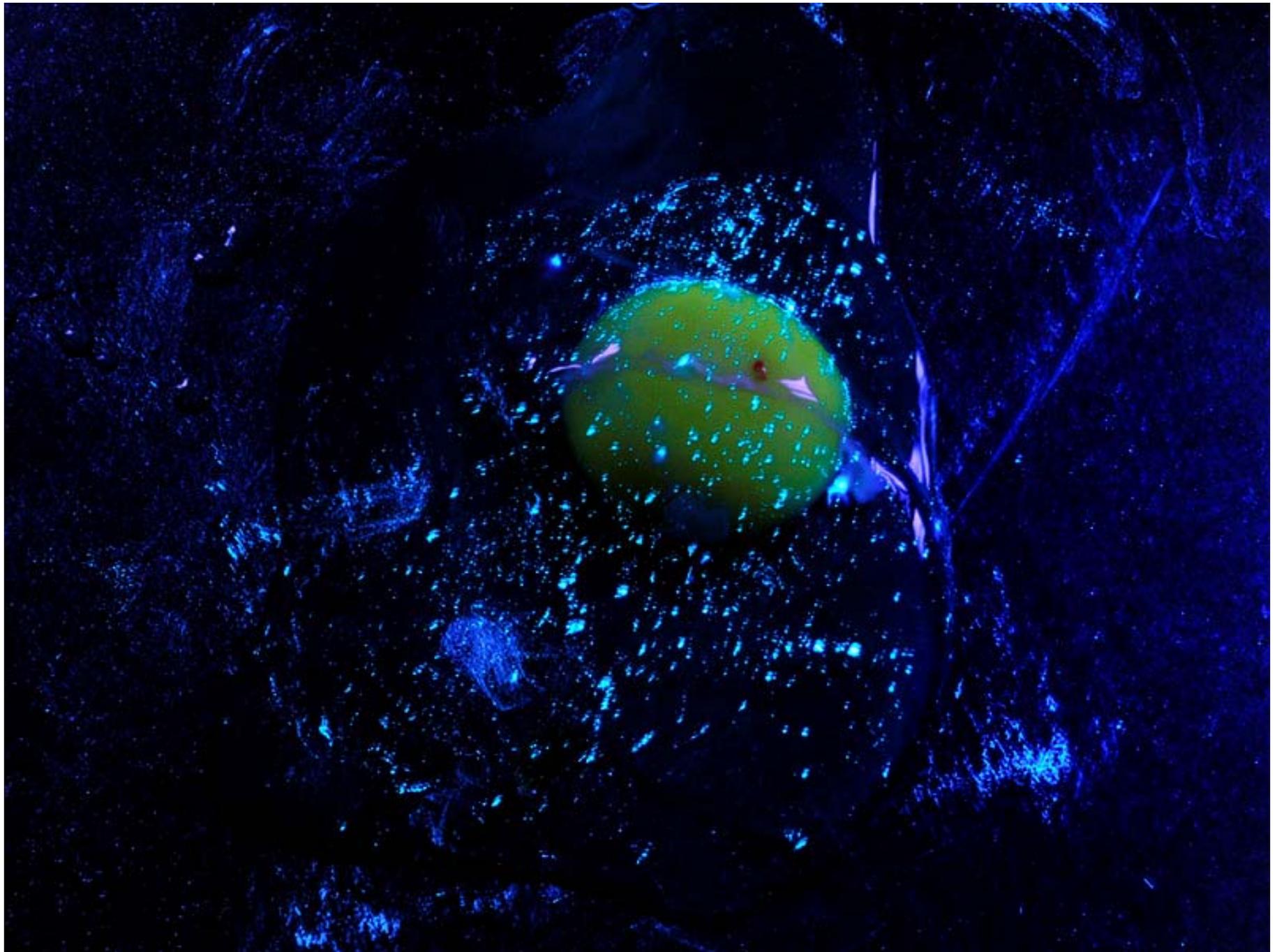


*It may...be the case that art helps us to visualize the world and new ideas and concepts in science only become 'real' as they are projected into visual mental models, i.e. when they are 'seen' within the theater of the mind. Thus, when changes in art influence the way we 'see' the world, they inevitably exert an influence on the way science "sees" nature.*

David Peat (Art Historian)









CHILD  
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This is, it seems to me, a general principle: you get bored with something not when you have exhausted its repertoire or behavior, but when you have mapped out the limits of the space that contains its behavior.

Douglas R. Hofstadter, 1979

*Gödel, Escher, Bach: an Eternal Golden Braid*

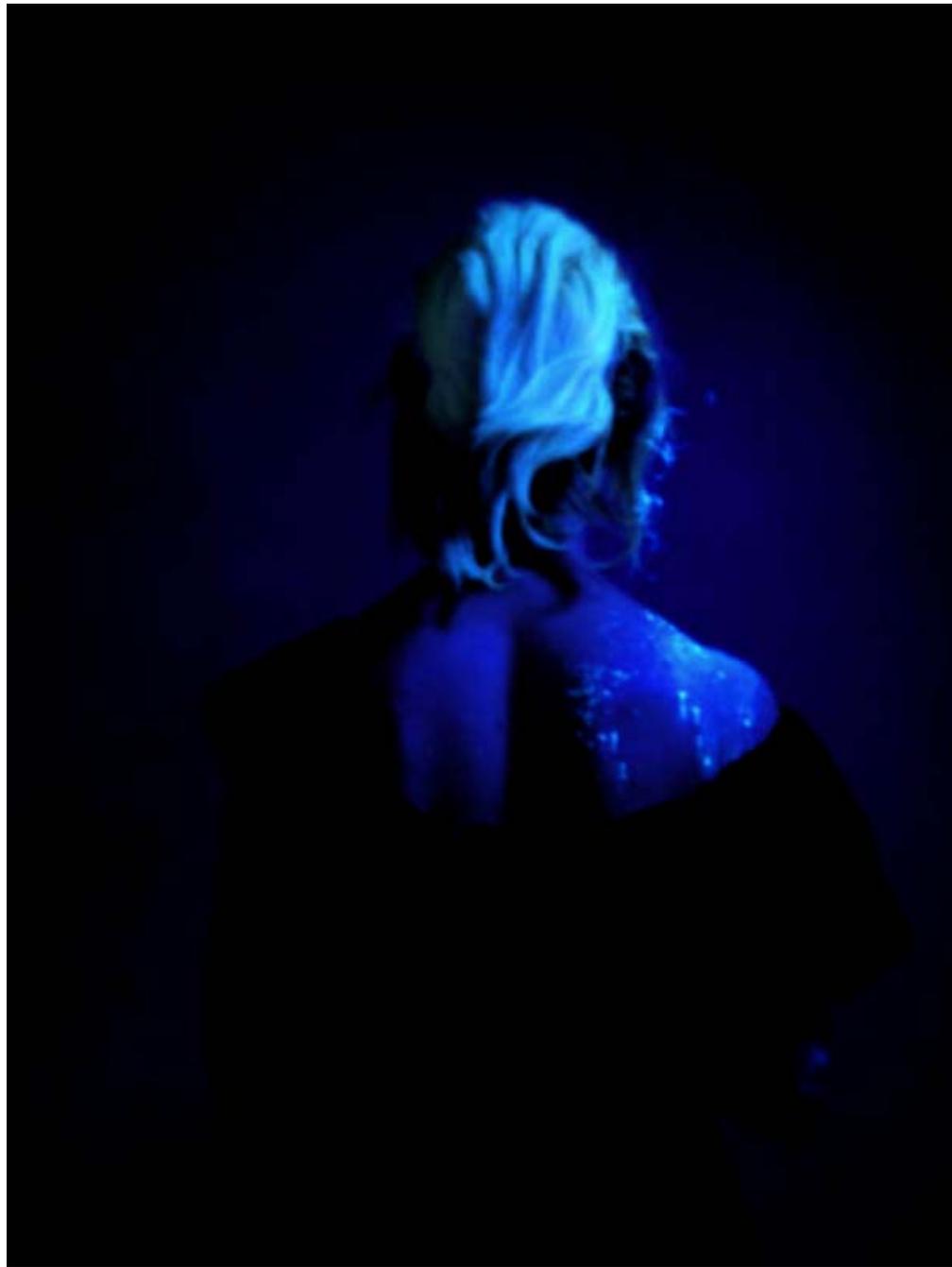
(writes about math, computers, poetry, and philosophy)

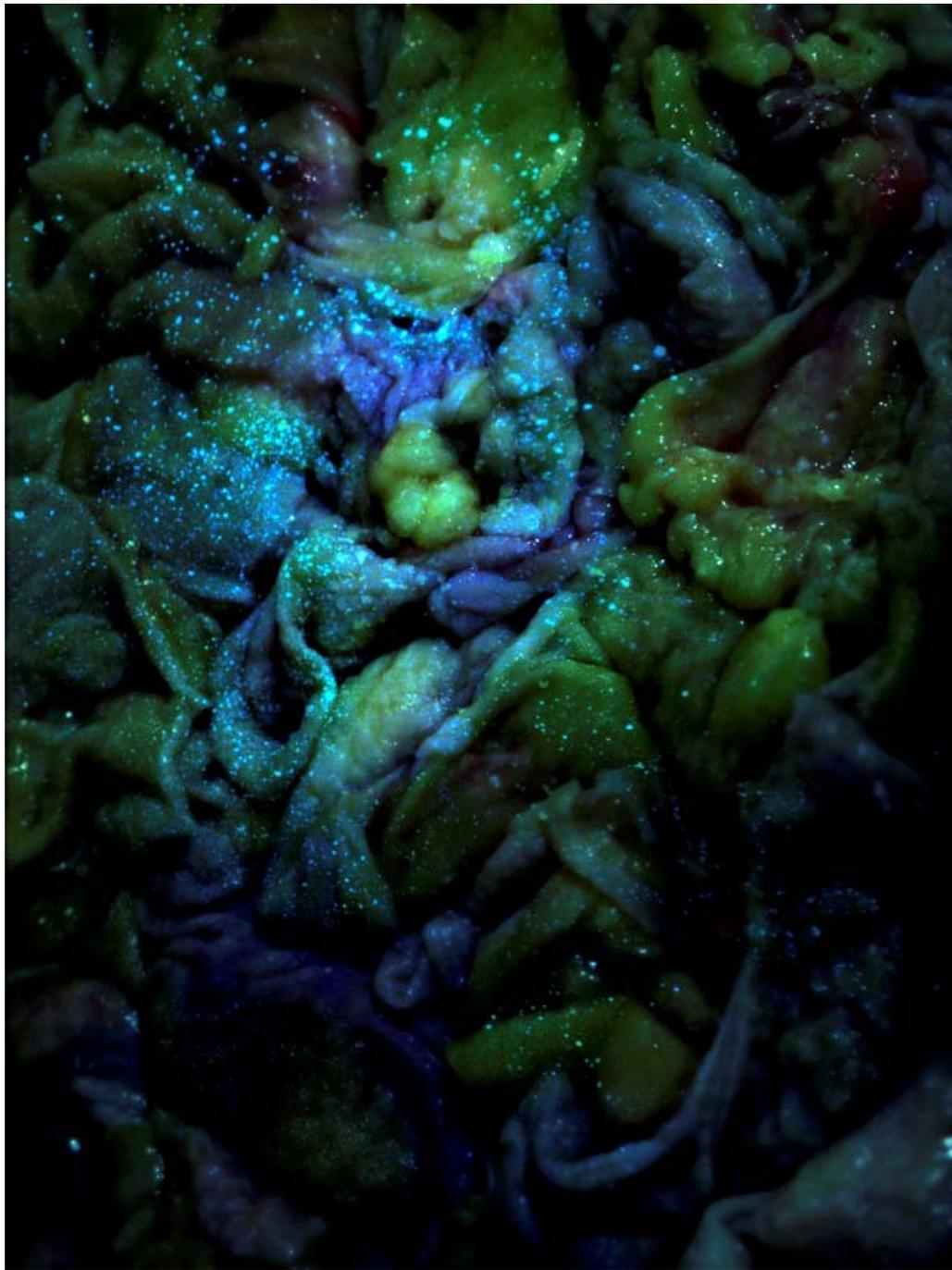
# Current Work

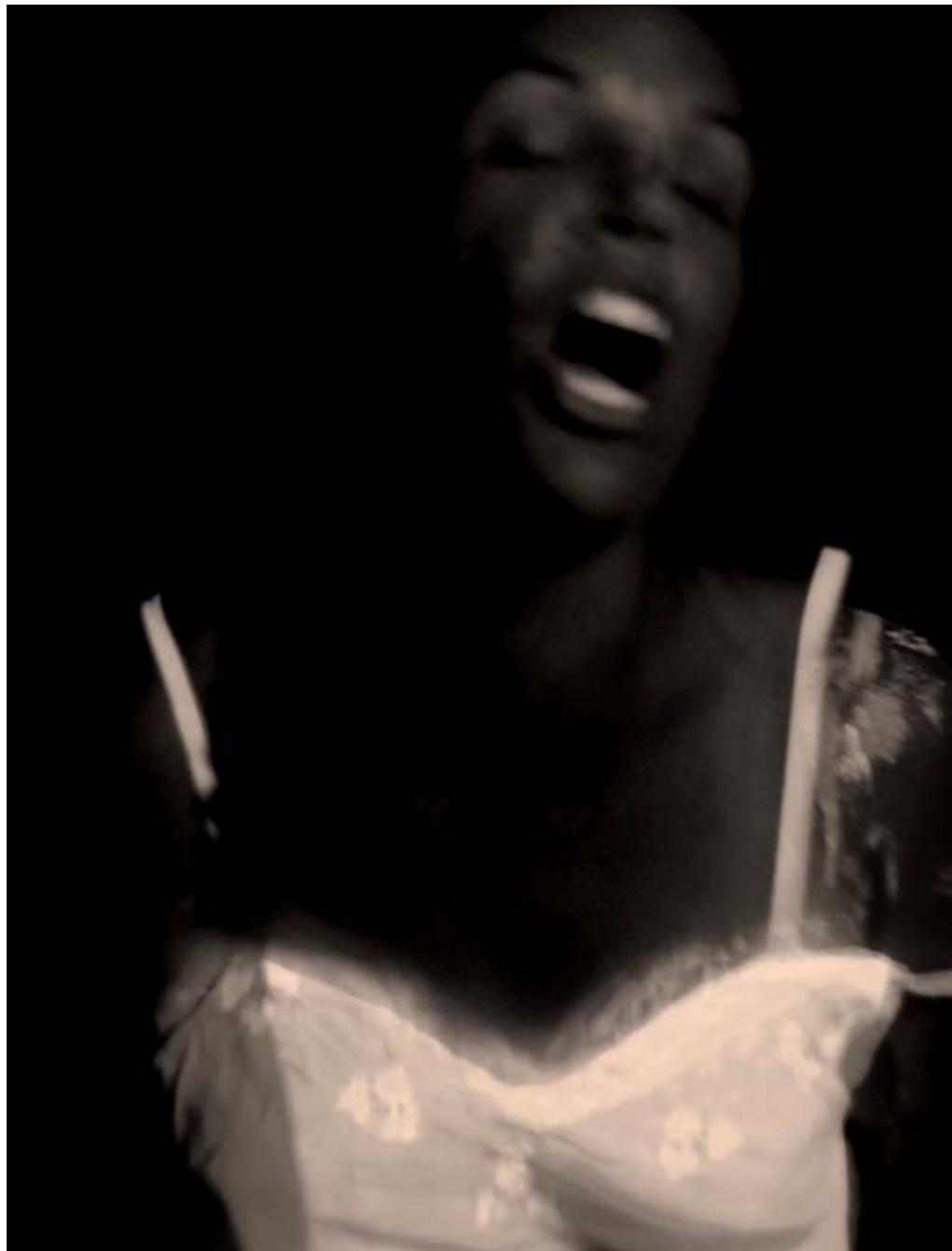
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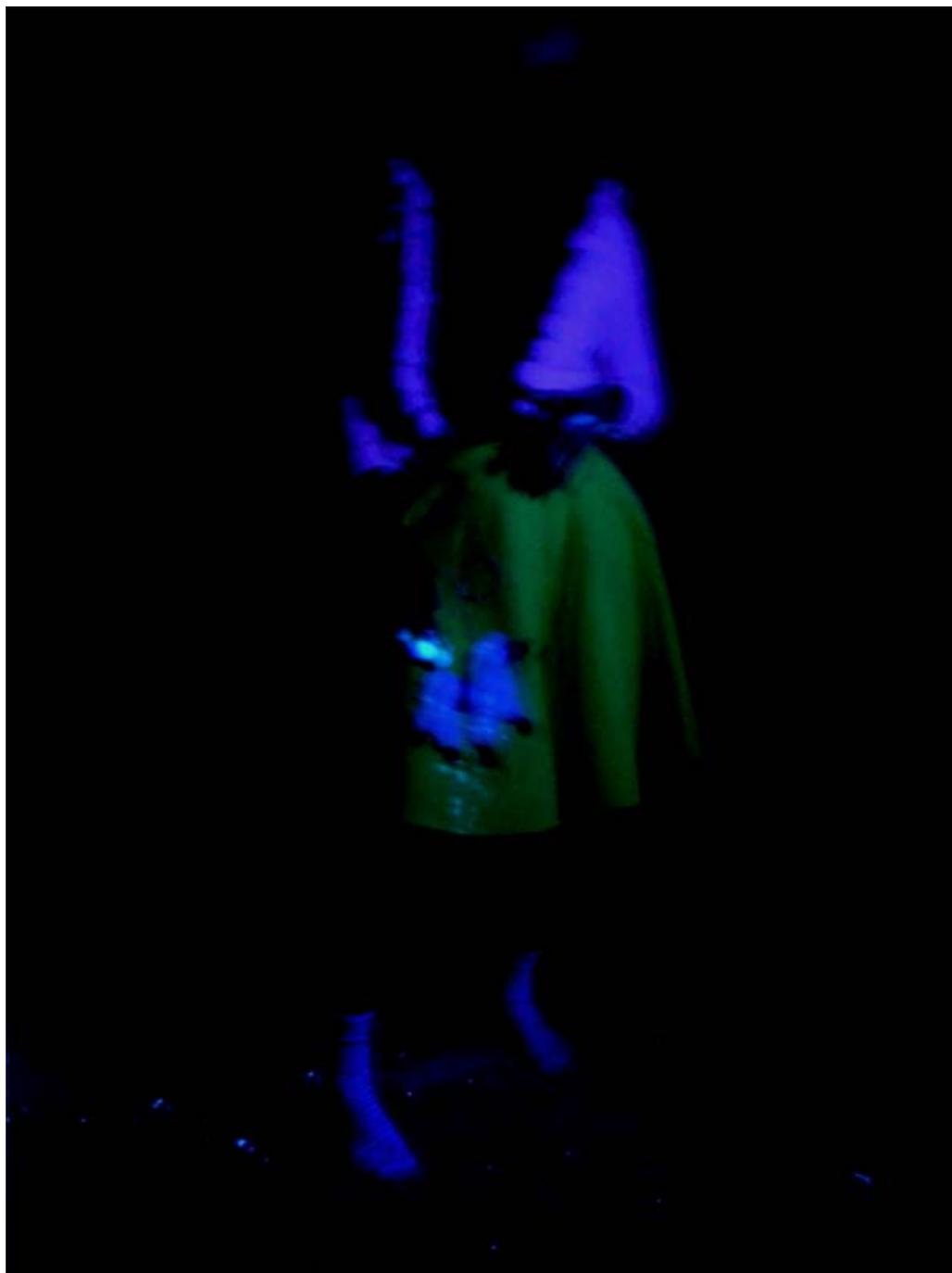
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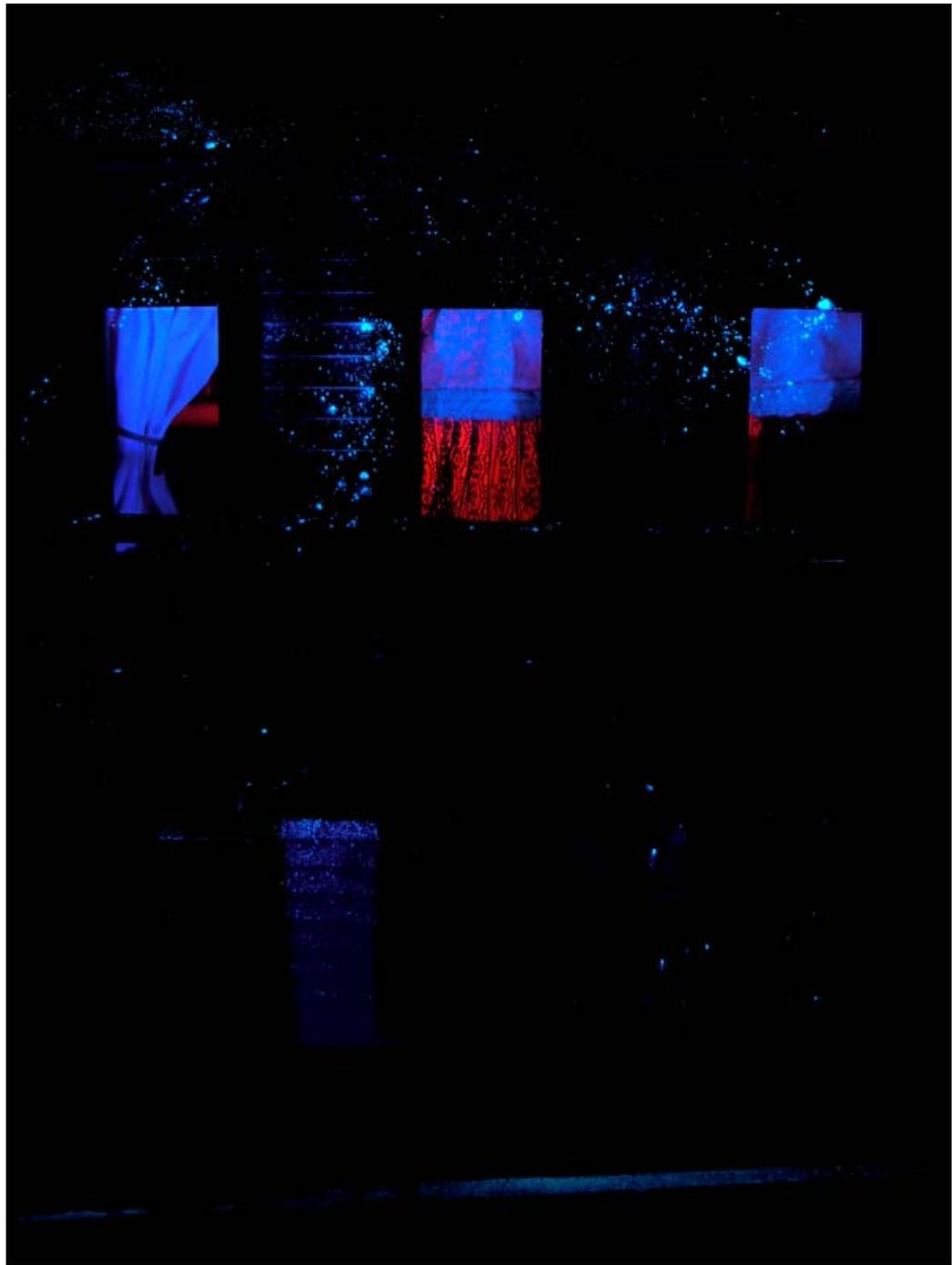


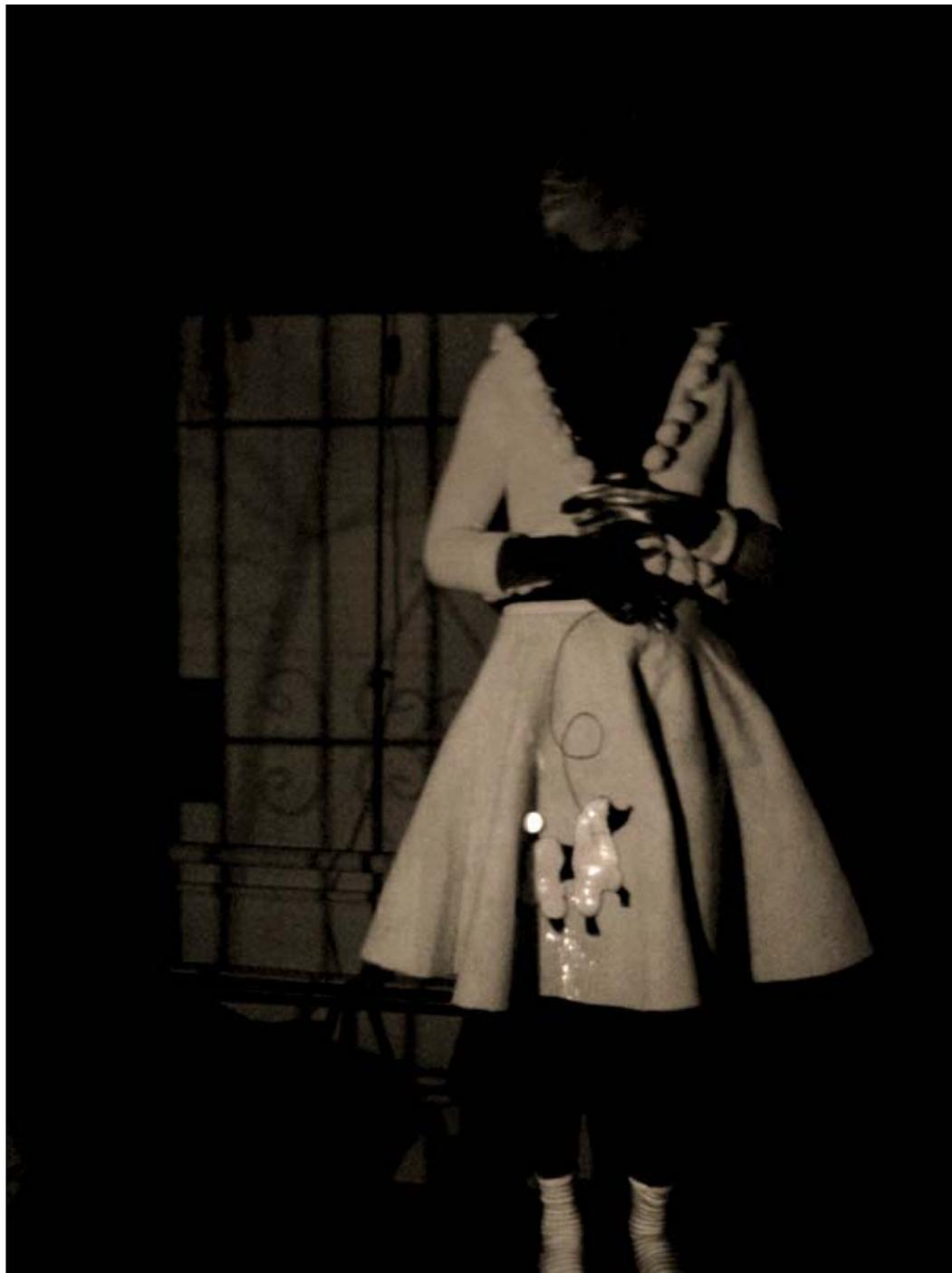
















*The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction.*

*Rachel Carson*



stills from film

*Laurie Türmer: Seeing the Invisible*

Jeremy Osgood, 2003