



Wellcome Film Project

The Swirling Safeguard: a study of insecticidal fogging techniques
Wellcome Trust, 1972.

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in co-operation with The Cooper Technical Bureau.

Technical Adviser: Martin Evans

An A W Oakes production.

Colour

Duration: 00:18:45:21

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<Narration over film, unknown narrator>

Man's fight against disease is based in antiquity; from the propitiation of natural gods to the blossoming of medical science in the last century, the path has been long and difficult, strewn with misguided and often bizarre ideas. A major barrier to his advance throughout the world, these afflictions have drained his strength, weakened his resources and spread misery through entire populations.

Modern medical science has led to the widespread use of prophylactic vaccines and drugs to prevent the spread of disease in man himself. Forward-looking governments, aided by worldwide educational campaigns, have established the necessary health and sanitation facilities so vital to the welfare of urban populations. These developments have produced enormous strides in checking debilitating and often fatal disease.

However, major insect-borne diseases still cause serious problems around the world.

<Series of maps in turn showing areas of: malaria, yellow fever, cholera, sleeping

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sickness and filariasis> Despite the enormous sums of money spent on eradication schemes, the blood-sucking mosquitoes and flies still go on biting. And that ancient plague of man, the housefly, still spreads its filth.

What else can be done? A new technique of insect control has been developed that is rapidly becoming part of the public health scientist's armoury in the fight against epidemic disease.

<Opening title>

The Swirling Safeguard a study of insecticidal fogging techniques

<Narration continues over film >

In the opening years of this century, the study of disease carrying insects and their complex relationship with man was already well established. Henry Wellcome, travelling on the Nile in 1901 and appalled by disease and the lack of hygiene he saw there, set out to further medical research in the region. His floating laboratory, working up the White Nile from its base in Khartoum, provided facilities for detailed study in the field. This venture, taking a lead from the pioneering work of the previous half century, was but a single link in the chain of investigations mounted to fight tropical disease. The major discoveries made by those early workers are now part of medical history. However, a hundred years after those first intelligent steps were taken the increasing population of the world, combined with the special problems of drug tolerance and insecticide resistance, make continuing research absolutely essential.

Working within the extensive facilities of the Wellcome Group, the Cooper Company, with a specialist knowledge of industrial and public health insect pest control, was the first to develop urban street fogging on a routine basis. Combining detailed laboratory investigations with widely ranging field experiments, modern street fogging formulations have been developed to meet the stringent specifications required by

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discerning public health authorities. Ever conscious of the risks to man's environment by the use of insecticides, the development of these formulations followed an orderly pattern of control tests into the toxicology of the new materials. When shown to be utterly safe, and only then, the biological performance of the new insecticides was evaluated.

Laboratory testing of many different materials against a variety of insect species naturally led on to field trial work. Here the behaviour of new products was observed under practical conditions. In this way street fogging formulations have been developed that provide a rapid knockdown and kill of flying insects, whilst remaining absolutely safe to use in the presence of man and animals. However, if the highly effective materials are not applied correctly, these benefits will be lost. Today a wide range of application equipment is available to public health authorities, and the choice of the correct machine for the job can appear very difficult.

Spraying equipment falls naturally into two categories of which the first covers the residual sprayers. Designed to produce a rain of heavy liquid droplets, they are used to lay down a deposit of insecticide onto surfaces. The second group, the air sprayers, produce a mist or fog of fine droplets that tend to float in the air and thus can be used to attack insects on the wing.

Of these sprayers, experience has shown thermal fog generators to be the most effective in producing the large volumes of fine particles that are required in routine outdoor fogging. In these types a petrol engine provides power for a turbine blower and fuel and insecticide pumps. A strong air-blast produced by the blower is then heated by the fuel burnt in a combustion chamber. At the fog head, insecticide is fed into the hot air stream where it vaporises. On contact with the cooler atmospheric air, the vapour condenses into a dense fog of minute droplets. Calibration of the insecticide supply enables the average droplet size of the fog to be controlled.

So much for basic principles. Now for some typical street fogging routines showing the various techniques used in practice. Effective street fogging in urban areas depends on a thorough knowledge of the area to be treated and precise planning of

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the action to be taken. If time and expense are not to be wasted, the operator undertaking the practical work must be correctly briefed.

To make the best use of an insecticidal fog, treatment must be carried out in the early morning or early evening when the air is still and cool. Windy conditions are useless. Careful preparation of the insecticidal equipment will pay dividends. Strict adherence to the instructions on the label when making up the dilute spray from the concentrate will ensure effective and economical use. Sufficient spray is prepared for the job in hand. The fogging machine is checked over and seen to be working correctly. Attention is also paid to other spraying equipment used for localised treatment of trouble spots. Armed with the most modern of insecticides the teams move off to another effective fogging operation.

There is no fear of the friendly fog among the people in the heart of the town. They appreciate its benefits, but to the fly death is on the way for there is nowhere in this thriving community where a fog will not reach it and end its disease-carrying days. In the markets and the food shops, where the fly can do most damage, the fog swirls and spreads penetrating into every nook and cranny.

00:09:34:00

Some areas are inaccessible to the mounted fog generator therefore a portable fogger is taken in to the complex of residential compounds that form part of this desert township. The water carrier goes about his business and mothers watch their children play safe in the knowledge that their health is in good hands.

In the market the days buying and selling is in full swing and the fogger moves on without causing a moment's pause in the best deal of the day. Once fogging is in progress, a residual insecticide is applied to refuse collection sites and other areas of high risk where fly breeding is a constant hazard. This is an essential measure in controlling the local fly population.

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Stagnant water provides ideal conditions for mosquito breeding. So a larvicide is applied by using a knapsack sprayer. On a larger scale, foliage along the banks of an irrigation ditch provides a resting site for adult mosquitoes and is attacked as part of an eradication scheme. On the farm too, where animals and their waste products are concentrated, areas exist that are highly attractive to a variety of fly species. Fogging in the cowshed itself is harmless to the animals yet provides a rapid knockdown and kill of the fly pests present. Free from the worries from fly plague, the cattle feed more contentedly and steadily put on weight and give more milk. At the slaughterhouse refuse material is equally attractive to the adult fly, and a breeding population can rapidly develop. Again, a fogging routine will minimise the risk.

It's not only flying insects that can be controlled by fogging. Conditions exist in sewers where cockroaches can find harbourage. Fog introduced into these otherwise inaccessible places will penetrate deeply throughout the system.

The environment of factories, especially those engaged in food production, can be kept clear of insects by routine fogging and thus reduce the risk of product contamination and loss of prestige. Routine fogging must also include public places and buildings, especially hospitals where fly control is imperative. The transmission of disease organisms, from soiled dressings to sterile instruments and other utensils, is a constant hazard without proper fly control. Even where general hygiene may appear to be at a high standard, flying insects can still be a problem creating a serious nuisance and contaminating food. The nuisance value of flies and biting insects cannot be underestimated in recreation areas. The health of local children and adults, as well as the revenue from the tourist trade, may be in jeopardy if these areas are not protected against insect attack.

There is nowhere in the modern community where the flying-insect menace is not a potential health hazard to man and his animals. Cooper Research now provides the public health scientist with a modern weapon to fight this threat and make the world a safer place in which to live.

<End Credits>



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<In addition to those listed at beginning of transcription>

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