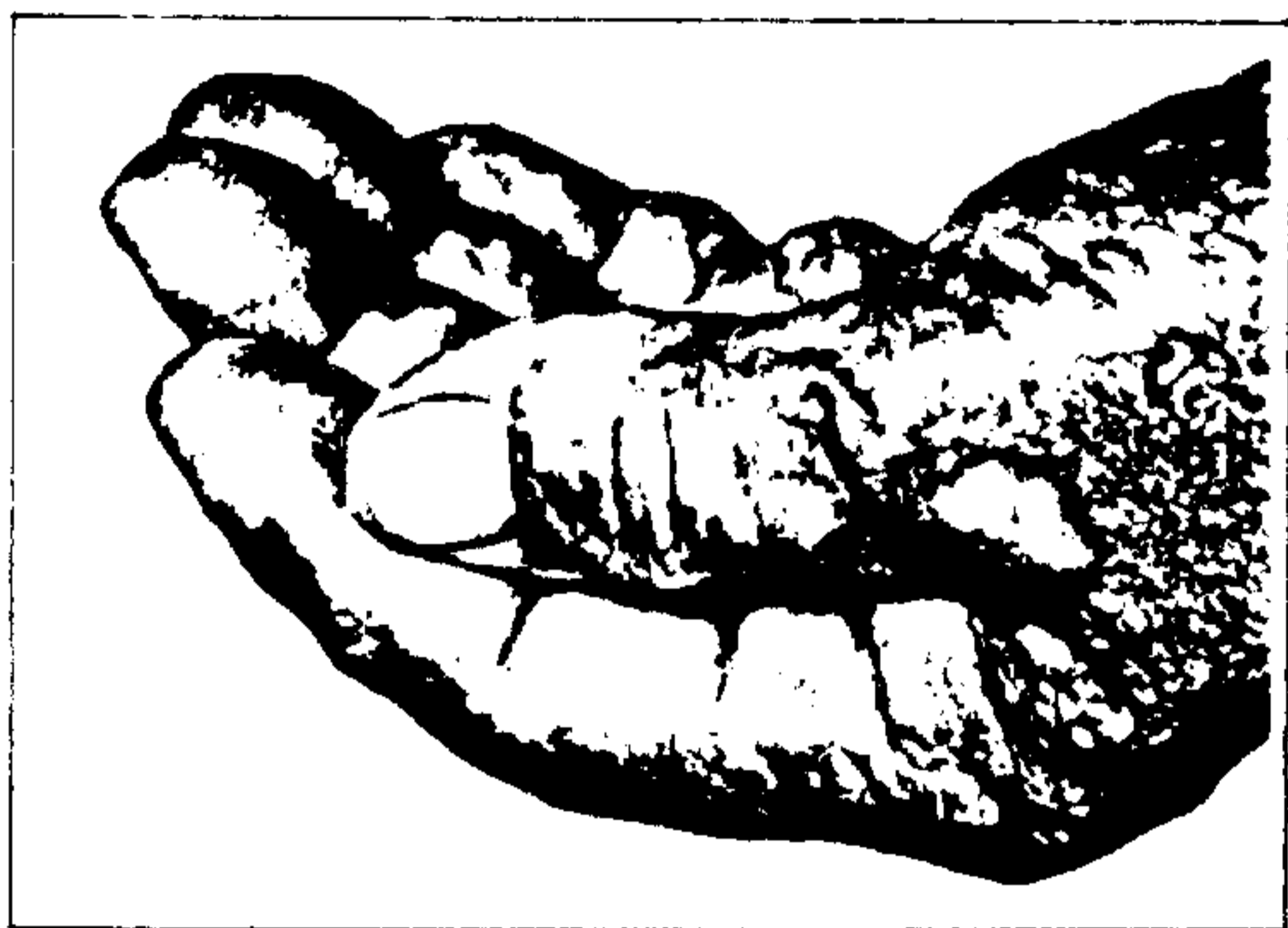

SAFETY

INDUSTRIAL HEALTH-DERMATITIS

By kind permission of Jabatan Kilang and Jentera Malaysia we reproduce the following article on Industrial Dermatitis.

INDUSTRIAL DERMATITIS and YOU



WHAT IS INDUSTRIAL DERMATITIS?

Industrial dermatitis is described as an inflammatory condition of the skin that can cause a great deal of suffering. It starts with irritation and redness, sometimes a swelling on parts of the body which have been in contact with some irritating substance whilst at work. Blisters may appear and, when these break, septic infection is possible.

Hands and arms are the parts most often affected with industrial dermatitis. But if you are being continually exposed to a lot of dust and fumes, irritation around your eyes, face or neck may be the first warning sign.

CAUSES

You can get industrial dermatitis while working in many trades and it is caused by most of the things used in industry. For example: mineral oil (diesel and other fuel oils and some cutting oils); chemicals, acids and resins; solvents and degreasers, like paraffin, etc.; cement, some hardwoods and penicillin.

PREVENTION

Remember to wash your hands, face and arms thoroughly with a suitable cleanser and water before

meal and after work. Do not wear dirty clothes-ever! Wash all dirty clothes. Do not keep oily rags or waste in your pockets; this too will help you fight dermatitis.

ACTION

As soon as you see signs of skin trouble - however trivial-report them to your Medical Officer. Any delay is likely to worsen your condition. So act and make sure that your body and clothes are always clean.

REMEMBER

Personal cleanliness prevents industrial dermatitis.

QUALITY PARAMETERS

MOISTURE AND IMPURITIES

These two parameters are discussed together as they are often grouped as one in the normal trading specifications of palm oil products. In practice, moisture content is determined by oven method which actually measures also in addition, volatile matters at the temperature of determination. Moisture and impurities are both extraneous materials which will contribute to processing loss in the refining operation.

Definition

The Volatile Matter is the loss in weight of the oil when heated under specified conditions, while impurities are those materials which are insoluble in n-hexane or light petroleum.

Determination

1. Volatile Matter

About 10 gm of homogeneous sample in a suitable preweighed clean container (petri dishes, porcelain or stainless steel dishes) is heated at 103 ± 0.2 C for 2 1/2 hours. The weight loss after cooling in a desiccator is measured and the result is expressed as follows :

$$\% \text{ Volatile Matter} = \frac{W_b - W_d}{W_b - W} \times 100$$

Where W = weight of dish

W_b = weight of dish and oil before drying

W_a = weight of dish and oil after drying

2. Impurities

A homogeneous solution of 20 gm of oil in 100 ml of solvent is filtered under slight vacuum. The residue retained on the filter is washed thoroughly to remove all the oil, followed by drying, cooling and weighing. The impurities content is expressed as follows.

$$\% \text{ Impurities} = \frac{W_1}{W_2} \times 100$$

Where W_1 = Weight of residue retained on the filter

W_2 = Weight of oil sample

The details on the procedures for determination of Volatile Matter and Impurities are compiled as methods P 2.1 and P 2.2 in the *PORIM TEST METHODS*.

Significance of Moisture and Impurities Content on Quality

Moisture

As water reacts with triglycerides to give fatty acids and partial glycerides, a high level of moisture is undesirable and detrimental to the quality of the oil, beside contributing to high refining losses. However it has also been established that dissolved water could retard oxidation process by hydrating trace metals. Thus it is generally accepted that a moisture content of 0.1 - 0.2% is the best optimal compromise between hydrolytic losses and reduction in oxidation for crude oil.

Impurities

Impurities content should be kept to a minimum as it has been reported that a large portion of trace metals such as iron is contained in the dirt.

HOW TO MINIMISE MOISTURE AND IMPURITIES

1. In the palm oil mill, the moisture content of the crude palm oil is reduced first by centrifugation after the clarification stage followed by vacuum

evaporation. The evaporation conditions should be optimised to give the desirable moisture level in the oil.

2. In the detergent fractionation plant, the crude palm olein and stearin must be properly dried in the vacuum dryer after the detergent washing stage.

3. During transportation and storage, care must be taken to ensure that the tanks are properly dried after cleaning prior to loading. Steam pipes must also be checked for leakages.

4. As impurities content in the oil is affected by dirt and soil or fruit bunches, cleanliness in the mills or refinery, and conditions of storage and handling, ample precautions and good house-keeping should be taken at the various sites or plants.

5. In the refinery, bleached oil should be properly filtered to ensure that all the spent clay is removed. Residues of spent clay in the refined oil will contribute not only to higher impurities content, but also affect its quality.

6. It is a good practice to regularly clean the storage tanks for crude or refined oil to remove sediments which are often high in moisture, impurities and phosphorus contents.

Remarks: True moisture content of an oil can be determined by Karl Fischer titration or Dean and Stark Distillation methods. These are not as commonly used as compared to oven drying method for volatile matter content.

(Tang Thin Sue)