

# BUREAU OF MUNICIPAL RESEARCH

TORONTO'S CITIZENS CAN CONTROL TORONTO'S AFFAIRS ONLY  
THROUGH FREQUENT, PROMPT, ACCURATE AND PERTINENT INFORMATION WITH REGARD TO TORONTO'S BUSINESS

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## THE SMOKE EVIL

**"We can hardly claim to be an efficient civilized society while this intolerable abuse the Smoke Nuisance is in being."**  
Sir Frank Baines (noted architect) in Ontario Research Foundation Bulletin, October, 1937.

### THE GROWTH OF THE CONCEPT OF CLEANLINESS

We are told that European cities of the Middle Ages were filthy compared with the same cities in modern times. Filth was then thrown into the middle of the street and gutters often ran full of sewage. Now millions of dollars are spent on sewage disposal, and the appearance of filth on a bathing beach causes disgust and alarm—disgust on account of the filth, and alarm on account of the threat of disease. In this respect therefore, we have made a notable advance.

We are told that cleanliness is next to Godliness. Perhaps this is not strictly true in all cases; but missionaries report that one of the earliest manifestations of a change of heart is an increased desire for personal cleanliness.

### OUR PRESENT STATUS IN DIRT CONSCIOUSNESS

Torontonians spend huge sums on personal cleanliness, which is no longer regarded as a luxury but as a basic necessity. Canada, the province of Ontario, and the corporation of the City of Toronto spend huge sums on the protection of food for human consumption. They spend somewhat smaller, but still large sums, on water purification. But expenditure, even by the city, for the protection of the city's air supply, is very small. Indeed only recently has any large part of the general public become "dirt" conscious as to the air they breathe. As a matter of fact the average Torontonian consumes daily from two to three pounds of food, about a pound of water, and thirty-five pounds, by weight, of air. From the standpoint of dirt, of disease, of working efficiency, the protection of the air supply can hardly be of less import-

ance to the average citizen than the protection of the food supply or water supply.

## WHY THE SMOKE NUISANCE SHOULD BE ABOLISHED

### 1. IT WASTES COAL.

"If combustion is complete the products leaving the stack will consist of carbon-dioxide, water vapour, free oxygen, nitrogen, and sulphur dioxide. Only a slight haze will be seen coming from the chimney stack, and of the gases issuing therefrom only the sulphur dioxide need be regarded as noxious or harmful." (Ontario Research Foundation Bulletin, page 5, September, 1937.)

### **That is, where there is smoke there is economic loss through incomplete combustion and lowered efficiency.**

"Apart from the pollution standpoint, the serious monetary losses due to faulty firing and inefficient combustion are by no means confined to domestic heating plants, for in many industrial plants improper firing and unsuitable equipment cause serious monetary losses. In 1936, 9,400,000 tons of bituminous coal were used throughout the province of Ontario. At an average delivered price of \$5.00 per ton, this coal cost the consumers \$47,000,000. If the unavoidable loss in efficiency due to **smoke and incomplete combustion** averaged only 2 per cent, this is equivalent to a fuel loss of nearly \$1,000,000." (Ontario Research Foundation Bulletin, page 5, October, 1937.)

### 2. IT DESTROYS OR DISFIGURES STONE AND BRICK SURFACES.

"The combustion of 1,000 tons of an average coal containing 1.5 per cent sulphur leads not only to the formation of grit, dust, and tarry matter, but also to the formation of the following acids: 45 tons of sulphuric acid, 3 to 7 tons of nitric acid (depending on the combustion conditions), and 0.5 tons of hydro-chloric acid." (Ontario Research Foundation Bulletin, page 5, October, 1937.)

**The tarry material referred to not only disfigures stone and brick surfaces, but "seals in" the various acids so that they can perform their maximum of destruction. Any home owner knows the disastrous effects of acids on eaves troughs. The effects on brick and stone are equally great but not so visible and measurable.**

### 3. IT DESTROYS PAINT.

This destruction is so visible and universal that no amplification of the fact is necessary.

### 4. IT DESTROYS OR WEAKENS VEGETATION.

"The Director of the Missouri Botanical Garden, St. Louis, Missouri, says, regarding the effect of atmospheric pollution on vegetation: 'The sulphuric acid deposited from the air on . . . . . acts as a persistent and gradual caustic, eating into the tissues not only of the leaves but of the more delicate twigs and branches. Sulphurous acid acts in an entirely different way, and its injurious action is more manifest in herbaceous and so-called soft-wooded plants . . . . . The actual deposit of a coat of finely divided carbon mixed with other substances is undoubtedly injurious.' . . . . ." (Ontario Research Foundation Bulletin, page 7, October, 1937.)

## Toronto plants trees and then weakens them with coal smoke.

### 5. IT AFFECTS HEALTH.

"The action of smoke on the lungs has been summarized by Dr. J. S. Taylor, Assistant Medical Officer of Health, Manchester, as follows (in part):

". . . 'As a result dwellers in the industrial cities have lungs more or less similar to those of the coal miner, not pinkish in colour like those of a child or one who tills the field, but blackened, both on the surfaces and in the depths, due to the deposit of carbon. The tarry matter and the less visible sulphur acids which are far more dangerous than the carbon set up an irritation in the mucous lining of the windpipe and smaller tubes . . . . This . . . is the sequence of pathological changes: catarrh, bronchitis, emphysema, heart failure'."

"H. M. Barrett carried out work in 1934 at the School of Hygiene, (University of) Toronto, to ascertain the influence of a smoky atmosphere on the antirachitic effect of ultra-violet radiation. His results indicated that smoke in concentrations ordinarily occurring in urban atmospheres possesses the power to absorb antirachitic rays to such an extent that their power to prevent rickets in rats considerably diminished." (Ontario Research Foundation Bulletin, page 7, October, 1937.)

**The diminution of the actinic rays not only tends to affect adversely the general health but may seriously lessen the efficiency of the worker and his sense of well being.**

### 6. IT DESTROYS FABRICS OF ALL KINDS.

Every housewife knows this to be true. It operates directly through deposits of carbon, tarry matter, ashes, and acids and indirectly through the processes of cleaning and laundering. Compare the life of draperies in your Toronto home with those at your summer cottage.

### 7. IT GREATLY INCREASES THE COST OF THE LAUNDRY IN EFFORT OR MONEY OR BOTH.

**Just compare a line of laundry in Toronto with a similar one in Muskoka or Haliburton County. Look carefully at your collar and shirt after one day's wear and compare it with your experience during your summer vacation.**

Some types of industry are handicapped by smoke laden air in their operation within the city. New industries of this kind might not be able to find sites within the limits of the corporation in any event, but may secure suitable locations within the metropolitan area. Also some sites within the City are rendered less attractive and therefore less salable by the proximity of chimneys which emit large quantities of dense smoke even for a limited period.

Some families which were already acutely "smoke-conscious", may have been influenced in moving to suburban areas on account of the comparative freedom of the latter from the smoke nuisance. Specialists in real estate state that at present this is not a factor. That it may become so, when people are as upset by dirt in the air they breathe as by dirt in the food and drink they consume, is to be expected.

Anything which prevents or may prevent the fullest possible use of the assets of the city—such as sewers, sewage disposal, water mains, sidewalks, etc., which have been purchased at the expense of many millions of dollars, and the creation of duplicate amenities in the environs, is to be deprecated.

The number of smoke stacks actively belching forth smoke used to be looked upon as a measure of prosperity. Preventable smoke is now rightly regarded as a sign of industrial and community inefficiency.

Toronto's record with regard to preventable smoke is not good. In November, 1936, the Smoke Control Association of Toronto published a brochure on the subject. It included some of the results of a study made by the University School of Hygiene for some six and a half months. Later this study was completed and among other things it showed that a gauge located at the corner of University and King Street, and operated for a year, indicated that 610 tons of solids, soluble and insoluble, were deposited annually per square mile in that district. Among the soluble items were 31.6 tons of sulphur trioxide ( $\text{SO}_3$ ), which combined with water, becomes sulphuric acid. Just how much carbon, ash, tar, and acid was deposited in human lungs on the way down is unknown, but it must have been considerable.

Anyone who is in doubt as to the extent of the smoke evil in Toronto—which is accentuated at the present time by the poor quality of fuel now available in many cases—may resolve their doubts by:

- a. looking toward the city from Toronto island on an average day
- b. or examining the dirt on the snow or "muck" on the streets of the city after a thaw.

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Extract from the bulletin of the Smoke Control Association  
November, 1936

### WHY PURE FOOD BUT POLLUTED AIR?

#### DOES IT MAKE ANY DIFFERENCE—

1. Whether the air we breathe is clean or dirty?
2. Whether paint and even the faces of stone buildings are disfigured or even disintegrated by the contents of smoke laden air?
3. Whether the draperies, linens and furniture of our buildings are made filthy and finally disintegrated by the chemical action of smoke?
4. Whether our clothing is defiled by smoke and destroyed finally by the action of smoke or by the efforts of cleaner and laundryman to keep clothes wearable?
5. How much is the purely economic loss resulting from our toleration of the smoke evil and menace?
6. Whether we feel and look clean or dirty and whether the community we live in looks spick and span or the opposite?

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It is interesting to note that in his 1946 inaugural address His Worship the Mayor emphasized the importance of smoke control and it is said that a modernized by-law is about to be introduced in the City Council. It is understood that this will have the support of the Council, but that the by-law will need the concurrence of the Provincial Authorities. No doubt, if public opinion is sufficiently pronounced in its favour, the final enactment of the by-law will be facilitated.