

die. Conservation -
my paper



Addition to "Economic Analysis and Air Conservation," by Mason Gaffney

Insert, p. 25, as paragraph, before last paragraph.

d. Available dump sites for sanitary land fill disposal of trash recede so far into the back country that truck removal of such wastes becomes an increasingly costly alternative to incineration. Milwaukee, for example, is on the verge of a major shift to greater incineration, forced by a shortage of dump sites within 30 miles.

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20

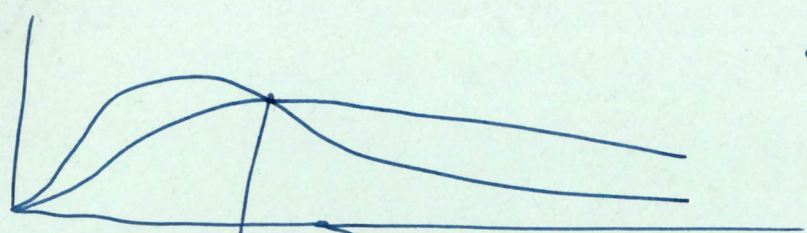
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①

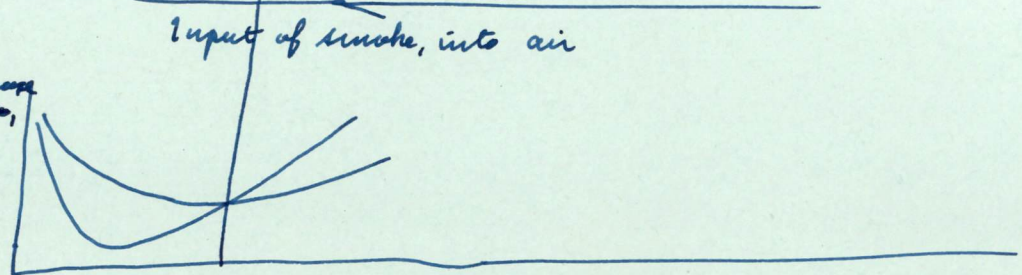
Output of damage



In this case social cost curve or fn. is shaped like a product fn.

②

"Cost" of damage in terms of smoke damage required

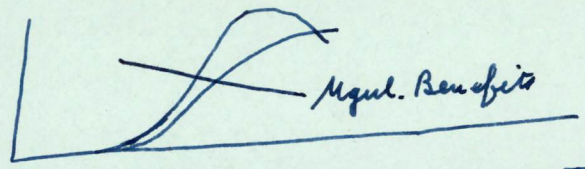


Output of ~~smoke~~ damage

a. Above are true reciprocals. Can also try another form, from

septic tank case:

Social cost, in pollu. damage



Marg. Benefits

Smoke, regarded as an output
Output of goods entailing smoke
Disposal of smoke, regarding that as an output, like sewage.

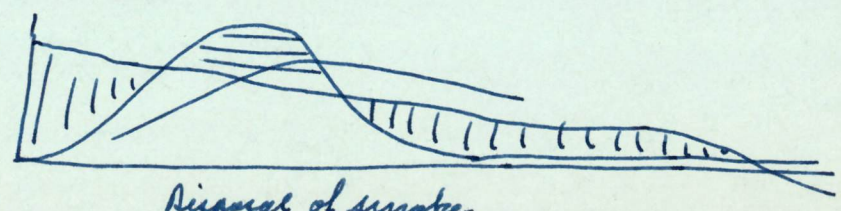
② becomes same form as ①, above.

To get away from negative values, regard smoke disposal as a positive good, whose cost is the damage output curve - as Gladstone said. And regard that as a supply curve - ok.

Ordinarily, stop polluting where $MB = MSC$, well back in Stage I.

Rarely, make a big jump into later reaches of Stage II - go thru reach of neg. MNB to get to later reach of pos. MNB :

Social cost & Ben.



Disposal of smoke

often, that wd. work, bcs. smokiness itself cuts into MSB from further disposal.

But often it wd. work — there are our smoking lounges.

Too bad they're in Stage II. But imptnt. thing is to stay away from max. AP of smoke disposal, in either I or II.

In drawing curves, must aggregate over full circle of air polln. Must surround refuge zones w. sparse popn., where air in II, hi AP or "AD", ave. damage.

EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL OF ECONOMIC ADVISERS
WASHINGTON, D.C. 20506

May 27, 1964

Dear Mason:

Thank you for sending me a copy of your "Economic Analysis and Air Conservation" paper. I have enjoyed reading it very much, and feel that you did a fine job. However, there are some points on which I would disagree with you, and so I am sending, gratuitously, the following comments.

Regarding the diagram on page 10, and most of the accompanying exposition, I suggest that stage II begins at the point of maximum marginal, rather than average, emission. *why?*

In the paragraph immediately above the diagram, some of your terminology is a bit misleading. Your statement, "avoid stage II," means that, assuming a "usual" marginal cost function, it will not be socially "profitable" to emit quantities in the stage II (as I redefined it above) range. (One could draw a marginal cost function for which the injunction to avoid stage II would be improper.)

Another relatively small point regarding the diagram: I don't think you mean the "incremental damage" curve to cross the horizontal axes. For that suggests that beyond some point, marginal damages are negative -- which is to say that there are actual marginal benefits, which reduce total damage.

One more point on this general issue. If a fixed budget for anti-pollution is available, and if some geographic areas are operating in stage II with others ⁱⁿ stage I, it is interesting to note that the most efficient allocation of that budget as between the stage I and II areas can not be determined a priori. All depends on the size of the budget and the absolute magnitudes, not the algebraic signs, of the slopes of the "incremental damage" curves in the relevant ranges.

In the second full paragraph on page 11, I think that the expression, "quite stringently," is not self-evidently true from the previous arguments. Even if the general shape of the curves is as indicated in your figure 1, the validity of your "quite stringently" statement depends critically on whether the true situation is more like diagram a than like b, below.



(a)



(b)

Page 13, top paragraph. Good point. I wonder, though, whether you have not overstated the present value of the tax by assuming that the annual tax was always based on the original, undepreciated, value of the property.

Page 13, second full paragraph. As I understood it, your conclusion here is correct provided that there is an effective tax on pollution, which can be avoided by installing the equipment. I don't believe this is entirely clear from your exposition, though.

I am confused regarding your discussion in the last paragraph of page 13. I should think that the effects of a fast write-off would be similar to those of the tax exemption, your proposal one. After all, the exemption approach is equivalent to an immediate, 100%, write-off of the cost of the equipment.

Pages 17-18. These discussions of vertical and horizontal segregation are very interesting.

I found your entire paper extremely rewarding and well done, and I hope you will interpret my comments above as indicators of my enthusiastic response to the paper as a whole.

Very best wishes.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Burt".

Burton A. Weisbrod

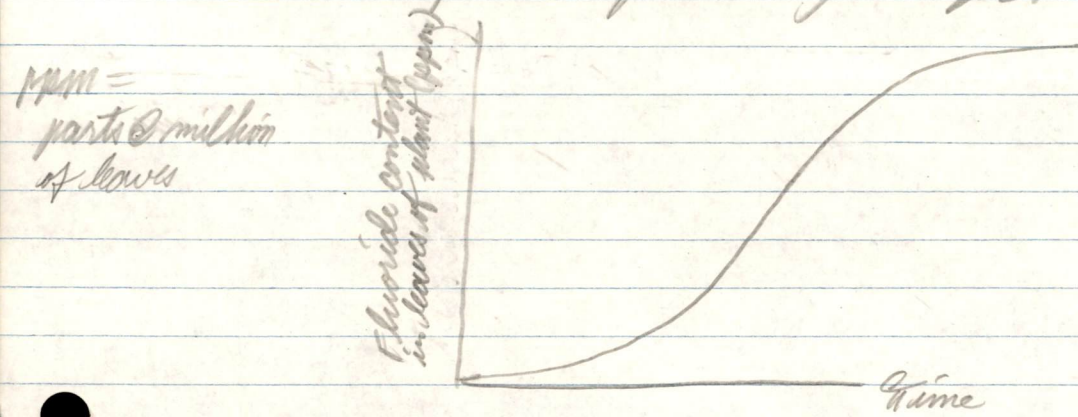
Professor Mason Gaffney
Chairman
Department of Economics
University of Wisconsin
Madison, Wisconsin

Comments: Weisbrod's Letter

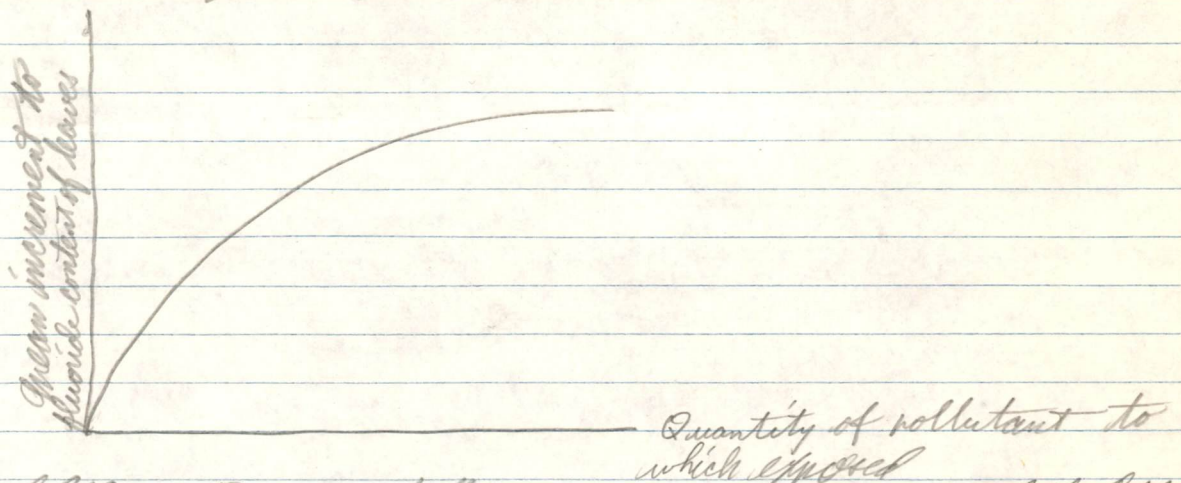
Numbers refer to Weisbrod's paragraphs

2. Apparently, he has his own private semantic system.

3. At least one study (cf. Brewer, R. F., et. al., "Some Effects of Hydrogen Fluoride Gas on Bearing Havel Orange Trees," Proceedings: American Society for Horticultural Science, Dec., 1960, pp. 208-214) has shown that application of a given quantity of HF over time to a plant results in a curve of the following shape:

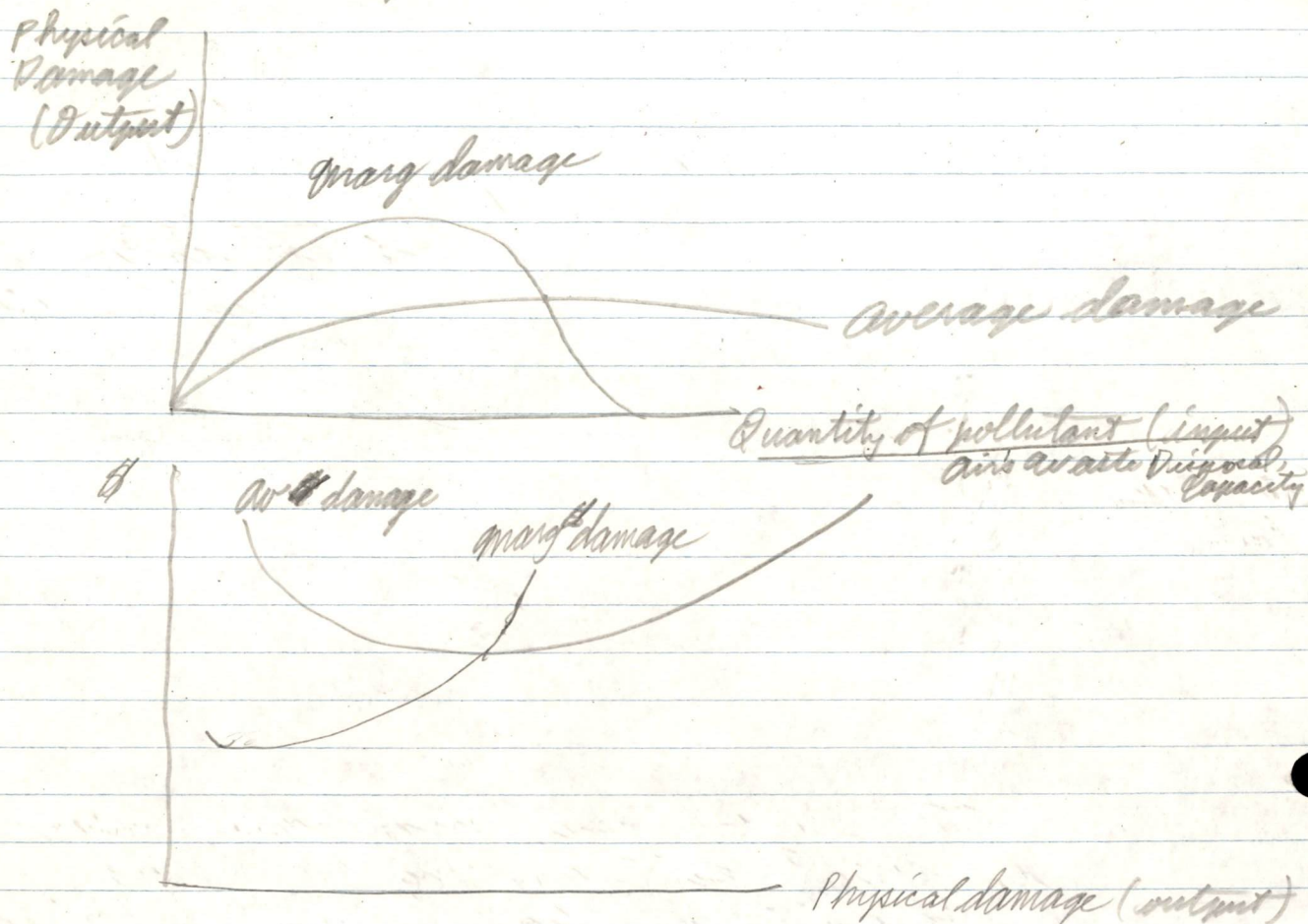


In another article (same journal, same number, pp. 215-219), Brewer found that increasing the amount of HF to which the plant was exposed resulted in an increase in the mean increments to the fluoride content of the plants leaves over time.



In addition, Brewer (cf. Brewer, R. F., et. al., "The Effects of Hydrogen Fluoride Gas on Seven Citrus Varieties," Proceedings: American Society for Horticultural Science, June, 1960, pp. 236-243.) has established what appears to be a definite inverse relationship between fluoride content of leaves and growth and/or fruit production.

Certainly, this particular series of studies provides no basis for assuming anything other than the "usual" shapes of the cost functions.

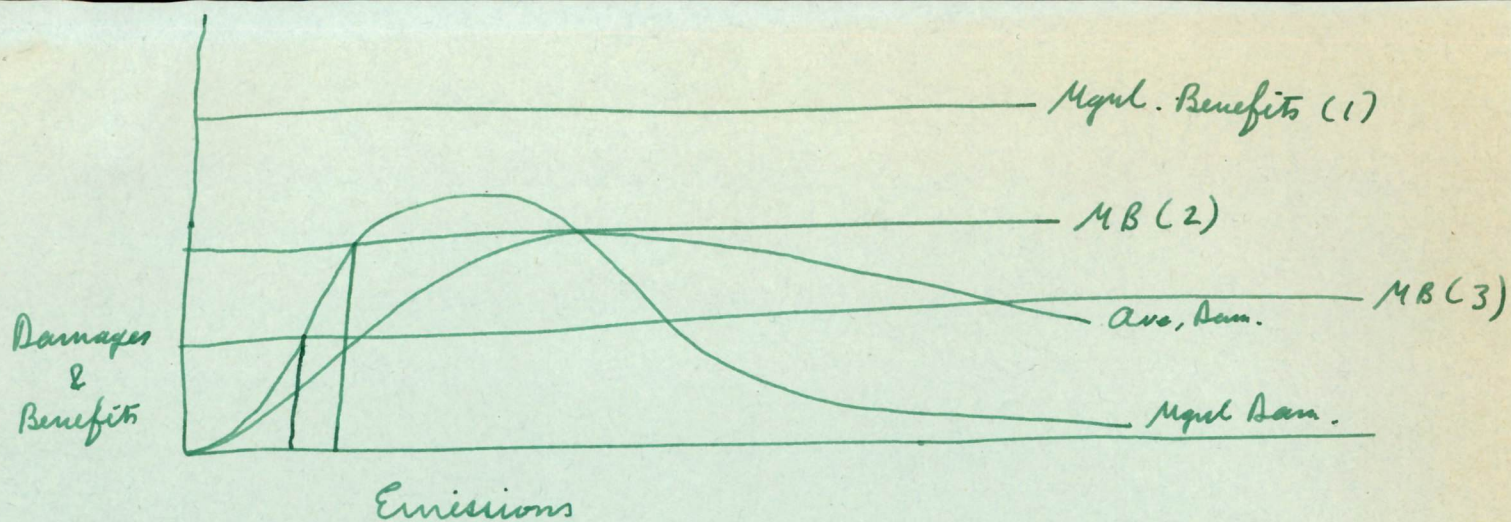


Although I haven't been able to find any quantitative data supporting it, I've had the strong impression from various readings that the probability of physical damage to plants from alternative quantities of pollutants closely resembles a cumulative normal distribution. This has some interesting implications and certainly in no way differs from the distribution typical of most biological phenomena.

4. Here I agree with Weisbrod as I assume that you now do.
5. Assuming the validity of the use of the law of variable proportions, and further assuming that, the area in Stage I is not about to enter Stage II (after constant returns), I can see no reason why at least that portion of the fixed budget necessary to push

the area in 3 tags. If back to the point of constant returns should not be allocated to the latter area. However, this assumes that the two areas are homogeneous. If they are not, he is probably correct.

6. I agree, if those curves are marginal damage curves; however this is another disagreement about semantics, and, as are most similar arguments, it is rather empty.
7. Valid point I suppose, but the principle of your discussion still isn't changed.
9. A matter of degree if both are tied to a particular site, but vastly different ec effects if one is tied and the other isn't.



I was wrong! You often wd. invade Stage II!

Air Conservation

Red Label

June 3, 1964

Dr. John Goldsmith
California State Department of
Public Health
2151 Berkeley Way
Berkeley 4, California

Dear John:

As I have just written Mollie, I was terribly sorry to have to miss the Washington meeting. I am sure that you all were able to keep the conversation flowing without me.

I am writing to ask about plans for publication. I find that a few changes would be desirable in my manuscript, and before submitting them it might be helpful if I knew just what form it was going to take in the report.

Sincerely,

M. Mason Gaffney
Chairman

MMG bg

.. Air paper.

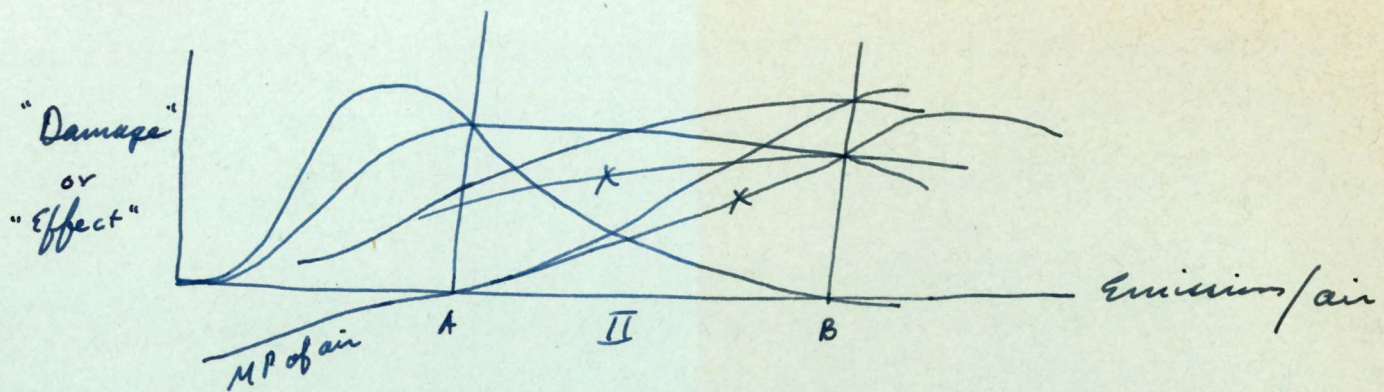
Zone in Stage 3 n.g.

ber. wd. be surrounded by
large zone in Stage 2,
as intensity peter out.

John -

Plans for publin? a few
changes neeq.

Add as note appended to paper before it goes out.



at A, by adding air, move left, & reduce "total damage"

In Stage II, by adding air, you Δ total damage. i.e. the dilution does not compensate in improved quality per ~~acre~~ acre^3 for the Δ no. of acres³, that are polluted.

No { [But that may not apply relevantly. Pres. people can spread out into more air, and ave. air quality is the only thing that matters. Spoilage of more air wd. only be a bad if the new air were already inhabited. No! New air isn't free. So total damage is relevant.]

The dilution solution would be best if air can be added at no cost. But there is a cost, the various costs of lower density.

Our graph merely shows the benefits. They are the neg. value of MP of air. They are not high until concn. gets very low. Near A, they are negligible.

To work this through completely, should have ~~a~~ time & space factors, too. Concn. declines gradually as move outwards. That means there can be no Stage III w/o being surrounded by stage II. That is only acceptable if land around it is poor & underused.

TIME

INCORPORATED

TIME & LIFE BUILDING
ROCKEFELLER CENTER
NEW YORK 10020
JUDSON 6-1212
EXECUTIVE OFFICES

May 27, 1964

Dear Mase:

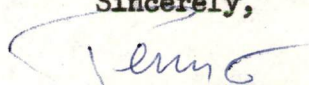
I never cease to be amazed at the thoroughness with which you cover all the angles -- as in your most interesting economic analysis of air conservation, which I read with both interest and profit in the air between New York and San Francisco.

Many thanks for sending it to me.

I can't answer your letter about the \$100 an acre exemption until I get a better reading from my friends in the lumber industry as to whether such an exemption would serve the political purpose I had in mind when I suggested it.

See you at Claremont.

Sincerely,



P. I. PRENTICE,
Vice President

Dr. M. Mason Gaffney
Milwaukee, Wisc.

Air paper to

Fred Clarenbach

Jack Hirschleifer

Armen Alchian

p. 8, last paragraph

Since BLM is notorious for underpricing its forage, might not this ~~implication~~ statement imply that air should be underpriced?

p. 9, top of page

Aren't you assuming that the pollutor should bear all costs here? This is somewhat inconsistent with earlier statements about "social value" for the reduction in the value of the pollutor's production may be greater than the reduction in the costs ~~of~~ that his pollution formerly imposed.

p. 10a

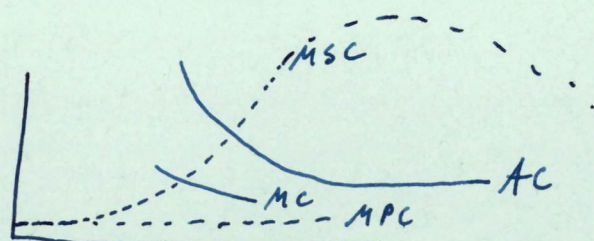
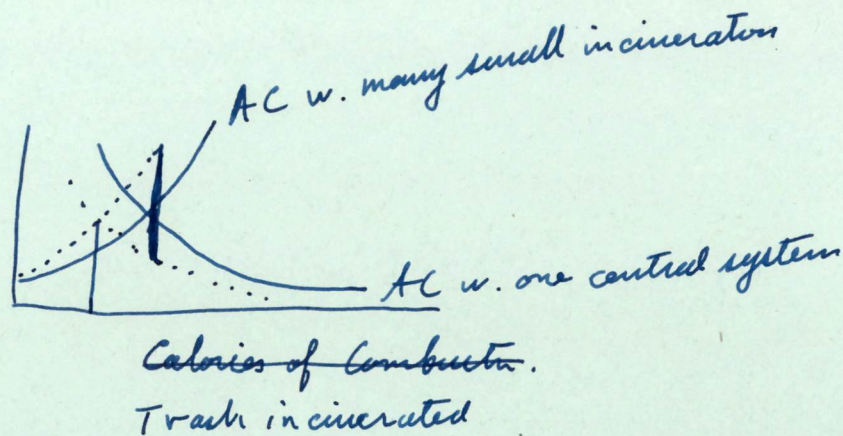
Why not develop the implication of being in each stage? To reach Stage III one must have already passed through Stage II, i.e., a high concentration of pollution has been attained. Unless the implications are stated, I doubt if the ~~pass~~ concept would have too much meaning to non-economists.

p. 16, last sentence in first paragraph under (5)

Why not a discussion of the factors that would have to be considered in order to determine an optimal quantity: turbulence, inversions, levels of concentration already present, etc. By itself, the statement might be considered an attempt to avoid the physical problems involved. True, such things are at least partially the concern of the physical scientist, but it is best to state this explicitly - the economist requires the data gathering activities of the physicist or

some such statement. "Optimal" can mean many different things to many different people

Cost of
disposal +
maintain const.
air quality



2 cases, same princip. Typically, as demand Δ s, or MSC Δ s, come to a point of switching to large central system. Use MC princ. to advance the time much. E.g. central heating; mass transit; trash collection;

DEPARTMENT OF PUBLIC HEALTH

BERKELEY



April 24, 1964

Professor M. Mason Gaffney
Department of Economics
University of Wisconsin - Milwaukee
Milwaukee, Wisconsin

Dear Mason:

I have just read your memo on "Economic Analysis and Air Conservation". It is easily the most stimulating thing I can recall reading in the whole field of air pollution. I am very pleased that you were able to find the time to complete it. We will be able to have it typed and I have had no trouble deciphering your manuscript.

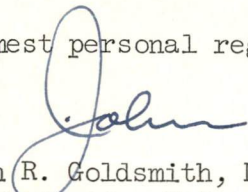
Your memo produced some marvelous soliloquies.

Am I an air conservationist?
Do I have mandarin tendencies?
How can we subvert cabalism?
How can we graduate from the "ambient air school"?

The initial portion on "Contributions of Economic Analysis to Problem Evaluation and Policy Formulation" is brilliant.

Thank you. Thank you.

Warmest personal regards,


John R. Goldsmith, M.D., Head
Air Pollution Medical Studies

JRG:dm

cc: J. Dixon