AP42 Section:	4.12, draft 1997
Related:	7
Title:	Letters, emails, meeting notes from Ron Ryan's files 1995 to 1999

only LOTUS NOTES email

TRACEY@rma.org
09/26/00 11:42 AM

To: Ron Ryan/RTP/USEPA/US
cc:
Subject: AP-42 Factors

Ron - Thanks for your help today on the TDF question. As I mentioned on the phone, I want to close the loop with you on the remaining outstanding issues with the rubber processing emission factors. I look forward to finally finalizing these factors on AP-42!

Grinding factors — my 11-16-99 email (Grapwise) to Tracey

Some months ago, you raised some questions regarding the particulate factors for grinding. In particular, you wanted to know why there was a note at the end of the factors table that listed the control efficientcies of the cyclones used in the testing and another note that said to assume 1 lb emission/lb rubber grond off for uncontrolled emissions. You also noted that the factors in the tables for sidewall, belt and retread grinding (surfing) do not match what was printed in the TRC volume 2.

This what we recommend: doubtful

1. List in the grinding table notes that the particulate numbers represent uncontrolled emissions (inlet concentrations).
2. List in the grinding table notes that the control efficiencies listed are for the equipment used in the testing. Facilities should modify the uncontrolled emissions factors by the control efficiencies of the control equipment used in their facility.
3. Remove the note that says to assume 1 lb emission/lb ground off.
4. The differencies you noted in the sidewall, belt and retreading particulate factors between the TRC volume 2 and the emission factors table are due to calculation errors - I checked them in the database and recalculated them. The ones in the EF tables are right.
5. I have attached a file with the notes on the grinding tables revised - hopefully this will help you in revising the tables on the website.

Also, I think the tire carcass grinding factors for toluene and methylene chloride need to still be updated, to reflect the Michelin 1/99 testing. Also, the total speciated organic number and the total HAPs number needs to be updated to reflect the new toluene and methylene chloride numbers (since both of those total figures simply represent the sum of the speciated numbers). The new numbers are all reflected in the attached excel file.

Compound 3 - Hexachlorobenzene emissions

As we have discussed before, RMA conducted testing to confirm that HCB is not present in tire manufacturing. This result was formalized in the Federal Register on August 3, by removing tire manufacturing from the list of sources of HCB in the CAA 112(c)(6) inventory (65 FR 47725).

The emission factor tables for mixing, calendering, and extruding need to be revised for compound 3 to show 0.00 lbs emissions/lb rubber processed. As you recall, the actual testing involved mixing emissions, and the calendering and extruding numbers were interpolated from the mixing data.

File Format

As you and I have discussed previously, it would be great if we could do away with all of the Word Perfect files on the EF site and instead put all the factors on excel sheets. I have excel sheets for all of the processes, or you can convert them. Whichever is easier. Please let me know how I can help.

Thanks, Tracey

ATT: Grind.xls

GRINDING OPERATIONS
HAP EMISSION FACTOR SUMMARY

Analyte Name	CAS #	Belt lb/lb rubber removed	Carcass lb/lb rubber removed	Retread lb/lb rubber processed	Sidewall / Whitewall lb/lb rubber removed
Total VOC		1.78E-03	5.21E-04	2.43E-04	1.59E-02
Total Speciated Organics		2.66E-03	2.53E-03	6.36E-04	1.10E-02
Total Organic HAPs		2.15E-03	1.27E-04	1.33E-05	1.12E-03
Total Metal HAPs		1.34E-05	6.35E-06	6.44E-08	3.72E-05
Total HAPs		2.17E-03	1.27E-04	1.33E-05	1.16E-03
Total Particulate Matter		2.26E-04	5.45E-01	9.09E-07	1.96E-04
1,1,1-Trichloroethane	71-55-6	0.00E+00	3.58E-07	2.19E-08	0.00E+00
1,1,2,2-Tetrachloroethane	79-34-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1,2-Trichloroethane	79-00-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1-Dichloroethane	75-34-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,1-Dichloroethene	75-35-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2,4-Trichlorobenzene	120-82-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2-Dibromo-3-Chloropropane	96-12-8	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2-Dibromoethane	106-93-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2-Dichloroethane	107-06-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,2-Dichloropropane	78-87-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,3-Butadiene	106-99-0	2.41E-05	2.65E-05	4.39E-08	2.40E-05
1,4-Dichlorobenzene	106-46-7	0.00E+00	0.00E+00	6.77E-09	0.00E+00
1,4-Dioxane	123-91-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
1,4-Phenylenediamine	106-50-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,4,5-Trichlorophenol	95-95-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,4,6-Trichlorophenol	88-06-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,4-Dinitrophenol	51-28-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2,4-Dinitrotoluene	121-14-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2-Butanone	78-93-3	6.22E-06	5.13E-07	1.51E-08	2.97E-05
2-Chloro-1,3-Butadiene	126-99-8	8.16E-05	0.00E+00	0.00E+00	0.00E+00
2-Chloroacetophenone	532-27-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2-Methylphenol	95-48-7	0.00E+00	0.00E+00	3.91E-09	0.00E+00
3,3'-Dichlorobenzidine	91-94-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3,3'-Dimethoxybenzidine	119-90-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
3,3'-Dimethylbenzidine	119-93-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4,4'-Methylenedianiline	101-77-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4-Aminobiphenyl	92-67-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
4-Methyl-2-pentanone	108-10-1	0.00E+00	1.92E-05	8.44E-07	0.00E+00
4-Nitrobiphenyl	92-93-3	3.80E-07	0.00E+00	0.00E+00	0.00E+00
4-Nitrophenol	100-02-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
a,a,a-Trichlorotoluene	98-07-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetaldehyde	75-07-0	1.53E-05	0.00E+00	0.00E+00	0.00E+00
Acetonitrile	75-05-8	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Acetophenone	98-86-2	1.77E-05	7.13E-07	1.89E-08	3.37E-06
Acrolein	107-02-8	6.44E-06	1.68E-06	4.70E-07	0.00E+00
Acrylonitrile	107-13-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Allyl Chloride	107-05-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Aniline	62-53-3	0.00E+00	1.97E-05	6.66E-08	4.05E-04
Benzene	71-43-2	0.00E+00	4.13E-06	9.96E-06	1.33E-05
Benzidine	92-87-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzyl Chloride	100-44-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biphenyl	92-52-4	0.00E+00	0.00E+00	6.63E-09	0.00E+00
bis(2-Chloroethyl)ether	111-44-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
bis(2-Ethylhexyl)phthalate	117-81-7	5.30E-05	7.94E-06	1.99E-08	2.76E-05
Bromoform	75-25-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Bromomethane	74-83-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium (Cd) Compounds		1.40E-07	8.58E-07	0.00E+00	7.38E-07
Carbon Disulfide	75-15-0	3.03E-04	2.58E-06	6.77E-07	1.90E-05
Carbon Tetrachloride	56-23-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Carbonyl Sulfide	463-58-1	7.14E-06	8.70E-06	0.00E+00	0.00E+00
Chlorobenzene	108-90-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloroethane	75-00-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloroform	67-66-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chloromethane	74-87-3	0.00E+00	0.00E+00	7.12E-09	0.00E+00
Chromium (Cr) Compounds		2.58E-06	1.44E-06	3.79E-08	1.34E-05
Cobalt (Co) Compounds		0.00E+00	0.00E+00	8.74E-09	0.00E+00
Cumene	98-82-8	0.00E+00	0.00E+00	0.00E+00	1.13E-06
Di-n-butylphthalate	84-74-2	3.31E-06	2.24E-06	3.87E-08	2.54E-06

GRINDING OPERATIONS
HAP EMISSION FACTOR SUMMARY

Analyte Name	CAS #	Belt lb/lb rubber removed	Carcass lb/lb rubber removed	Retread lb/lb rubber processed	Sidewall / Whitewall lb/lb rubber removed
Dibenzofuran	132-64-9	0.00E+00	1.59E-07	0.00E+00	0.00E+00
Dimethylaminoazobenzene	60-11-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Dimethylphthalate	131-11-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Epichlorohydrin	106-89-8	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethylbenzene	100-41-4	0.00E+00	0.00E+00	0.00E+00	5.70E-05
Hexachlorobenzene	118-74-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hexachlorobutadiene	87-68-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hexachlorocyclopentadiene	77-47-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hexachloroethane	67-72-1	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Hexane	110-54-3	4.18E-05	1.60E-05	0.00E+00	1.24E-04
Hydroquinone	123-31-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Isooctane	540-84-1	0.00E+00	1.09E-05	0.00E+00	1.15E-04
Isophorone	78-59-1	0.00E+00	0.00E+00	6.46E-09	0.00E+00
Lead (Pb) Compounds		1.59E-06	2.02E-06	0.00E+00	1.55E-05
m-Xylene + p-Xylene		8.51E-06	2.23E-06	5.36E-08	3.18E-05
Methylene bis-chloroaniline	101-14-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Methylene Chloride	75-09-2	4.98E-05	2.50E-07	1.67E-07	2.76E-05
N,N-Dimethylaniline	121-69-7	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N-Nitrosodimethylamine	62-75-9	0.00E+00	0.00E+00	0.00E+00	0.00E+00
N-Nitrosomorpholine	59-89-2	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Naphthalene	91-20-3	4.02E-06	5.81E-07	2.11E-08	3.81E-06
Nickel (Ni) Compounds		9.13E-06	2.03E-06	1.78E-08	7.51E-06
Nitrobenzene	98-95-3	0.00E+00	0.00E+00	0.00E+00	0.00E+00
o-Anisidine	90-04-0	0.00E+00	0.00E+00	0.00E+00	0.00E+00
o-Toluidine	95-53-4	0.00E+00	2.55E-06	0.00E+00	0.00E+00
o-Xylene	95-47-6	5.40E-06	0.00E+00	4.17E-08	1.86E-05
Pentachloronitrobenzene	82-68-8	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Pentachlorophenol	87-86-5	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Phenol	108-95-2	8.88E-06	1.66E-06	3.04E-07	1.57E-05
Propylene Oxide	75-56-9	3.06E-05	0.00E+00	0.00E+00	0.00E+00
Styrene	100-42-5	0.00E+00	0.00E+00	9.86E-08	1.69E-05
t-Butyl Methyl Ether	1634-04-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tetrachloroethene	127-18-4	1.39E-04	0.00E+00	7.58E-09	0.00E+00
Toluene	108-88-3	6.30E-06	6.30E-06	3.82E-07	1.86E-04
Trichloroethene	79-01-6	0.00E+00	1.95E-06	0.00E+00	0.00E+00
Trifluralin	1582-09-8	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vinyl Acetate	108-05-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vinyl Chloride	75-01-4	0.00E+00	0.00E+00	0.00E+00	0.00E+00

NOTES:

Sidewall, carcass, and belt grinding are reported in pounds emitted per pound of rubber removed or ground-off.

Retread buffing is reported in pounds emitted per pound of rubber processed.

All factors represent uncontrolled emissions. Below are the control efficiencies for the equipment used in testing:

Particulate Matter Control:

- Sidewall by cyclone - 91.9%
- Carcass by cyclone - 97.8%
- Belt by cyclone and ESP - 99.97%
- Retread by cyclone and baghouse - 97.9%

Toluene and methylene chloride factors on this table for carcass grinding were updated from the original by testing performed by Michelin North America in 1/99. The updated factors were submitted to EPA for inclusion in the AP-42. The revisions for toluene and methylene cloride are also reflected in the factors for Total HAPs, Total Organic HAPs and Total Speciated Organics.

TRACEY@rma.org
09/26/00 11:42 AM

To: Ron Ryan/RTP/USEPA/US
cc:
Subject: AP-42 Factors

Ron - Thanks for your help today on the TDF question. As I mentioned on the phone, I want to close the loop with you on the remaining outstanding issues with the rubber processing emission factors. I look forward to finally finalizing these factors on AP-42!

Grinding factors

Some months ago, you raised some questions regarding the particulate factors for grinding. In particular, you wanted to know why there was a note at the end of the factors table that listed the control efficientcies of the cyclones used in the testing and another note that said to assume 1 lb emission/lb rubber grond off for uncontrolled emissions. You also noted that the factors in the tables for sidewall, belt and retread grinding do not match what was printed in the TRC volume 2.

This what we recommend:
1. List in the grinding table notes that the particulate numbers represent uncontrolled emissions (inlet concentrations).
2. List in the grinding table notes that the control efficiencies listed are for the equipment used in the testing. Facilities should modify the uncontrolled emissions factors by the control efficiencies of the control equipment used in their facility.
3. Remove the note that says to assume 1 lb emission/lb ground off.
4. The differencies you noted in the sidewall, belt and retreading particulate factors between the TRC volume 2 and the emission factors table are due to calculation errors - I checked them in the database and recalculated them. The ones in the EF tables are right.
5. I have attached a file with the notes on the grinding tables revised - hopefully this will help you in revising the tables on the website.

Also, I think the tire carcass grinding factors for toluene and methylene chloride need to still be updated, to reflect the Michelin 1/99 testing. Also, the total speciated organic number and the total HAPs number needs to be updated to reflect the new toluene and methylene chloride numbers (since both of those total figures simply represent the sum of the speciated numbers). The new numbers are all reflected in the attached excel file. Grind.xls

Compound 3 - Hexachlorobenzene emissions

As we have discussed before, RMA conducted testing to confirm that HCB is not present in tire manufacturing. This result was formalized in the Federal Register on August 3, by removing tire manufacturing from the list of sources of HCB in the CAA 112(c)(6) inventory (65 FR 47725).

The emission factor tables for mixing, calendering, and extruding need to be revised for compound 3 to show 0.00 lbs emissions/lb rubber processed. As you recall, the actual testing involved mixing emissions, and the calendering and extruding numbers were interpolated from the mixing data.

File Format

As you and I have discussed previously, it would be great if we could do away with all of the Word Perfect files on the EF site and instead put all the factors on excel sheets. I have excel sheets for all of the processes, or you can convert them. Whichever is easier. Please let me know how I can help.

Thanks, Tracey

From: RON RYAN
To: RTPMAINHUB.INTERNET."tracey@rma.org"
Date: 11/16/99 12:00pm
Subject: AP-42 Grinding PM factors

Tracey,

I finished reformatting the Grinding emission factor table and changed the toluene and methylene chloride values for carcass grinding. However, when I tried to clear up the confusing footnotes regarding Particulate Matter control, I ran across some major errors.

The footnote provides 4 control efficiencies, which seem to be supported by info I found in Vol I, table 4.13l. But the footnote also says use an uncontrolled factor of 1.0 lb/lb rubber removed, while the 6th line of the table itself provides much lower Total Particulate Matter emission factors. I have checked all 4 volumes of background material, knowing that the final calculations in several of the volumes are not current and reliable. I'm operating on the assumption that Vol 2 raw project data are still valid. The PM emission rates in Vol 2, Tables F.1-1, F.3-1, and F.4-1 are 4 orders of magnitude larger than the values that have been in the draft AP-42 table. Only the Carcass grinding PM efs from Table F.2-1 match the AP-42 draft.

Can you verify the final efs that RMA has in both print and the Access database, and I will get these into the final AP-42 tables. Also, I am reminded that I do not yet have the Sept '96 RMA manual that replaced Volume 4. My volume 4 has incorrect uncontrolled rates and control efficiencies. If the Sept '96 version did not catch these errors, you may want to alert members that received that copy that the PM factors may be significantly low.

The VOC values seem to be correct in the AP-42 tables. I hope to check thru the metals and some of the individual compounds to insure that Vol 2 data is what is reflected in the AP-42 tables. I am also working on the assumption that the inlet to the cyclone (uncontrolled values) is what we will be reporting in the AP-42 tables, and then we'll give a typical control efficiency for PM and maybe metals in a footnote.

Thanks,
Ron

Telecon w/ Tracey Norberg, RMA:

"Vol 2 data didn't make sense. More PM emitted than material ground off → 1.19 lb/lb ground off for BELT GRINDING. This led to footnote to use 1.0 lbs/lb rubber removed as the conservative 100% emitted assumption.

"For belts, Carcass, & sidewall, she thinks it was assumed efficiencies & 1.0 lb/lb assumption. Retread is based on data."

202-682-4839

From: RON RYAN
To: RTPMAINHUB.INTERNET."tracey@rma.org"
Date: 6/4/99 4:44pm
Subject: AP-42 documentation review at TRC

Tracey,

I've spent quite a bit of time going thru the TRC volumes this week and last to determine what test data I'd like to see on the 24th in Lowell, MA. I propose the following be made available for my review, although I'm still trying to figure out an efficient way to check a sizable portion of it.

I'd like to see the field test reports (including calibrations, raw readings, process rate data and other notes), the lab analysis, and final calculations for the following. I assume all of the various test method (M25A, metals, sulfur, etc) results will be in one report for a given piece of equipment and rubber compound, and I would like to see all of the test methods results for:

(3) Compounds 4, 6, 9, & 22 for small mixer1, small mixer2, and the large mixer. Also Compound 13 for small mixer2, and Compound 5 (3 runs) on the large mixer w/Torit control;

Compound 12 (3 runs) on warmup mill #1 and Compound 4 on warmup mill #2. (I may have the mill #s switched);

Compounds 4 and 22 on the extruder;

Compound 12 (3 runs) on calendar (#2?);

Compounds 9 (unextruded), 13, 19, & 22 for the platen press; ✓ runs 4-1 10, 19, 24, 7, 8, 9

Compounds 4 & 22 for the autoclave;

Compound 22 for the hot air curing oven;

(1) Tires C & D for the tire press; 4 & 3

(2) and the carcass grinding tests (3 runs).

I'd also like to see the numbering or coding system which ties the field tests to the lab results and both to the Access database. Perhaps this and some documentation of the files and fields and number of records in the Access database could be made available before the Lowell visit.

FYI, I do have a copy of volume 4, "Emission Factor Application Manual". The cover sheet is dated May 1995, but my handwritten note on it says that I have replaced all the pages with a revision provided to me by Dale Louda at a June 12, 1995 meeting in RTP. However, I have another, much more recent note that says that there is a September 1996 revision at RMA, and I don't believe I ever received that revision.

Let me know if any clarifications or comments.
Thanks.

Ron Ryan
USEPA
919-541-4330

✓ dioxin formaldehyde?

From: RON RYAN
To: RTPMAINHUB:RTPMAINHUB.INTERNET:"tracey@rma.org"
Date: 10/7/98 9:52am
Subject: Re: AP-42 -Reply -Reply

Tracey -

The only "raw data" that we have is what is contained in the TRC report. We have two sources of information in the 4-volume TRC report for each emission factor. One source is simply a set of summary tables, showing the bottom line emission factors, being no more detailed and hopefully agreeing with what appears in the AP-42 draft. These summary tables are in volume 4. The other source is in volume 2, and we have referred to this as "raw data", although it is not the original, fully documented test reports. Volume 2 shows slightly more detail than volume 4, namely, it shows the test results for individual runs (usually 3) before they are averaged together to get the single emission factor appearing in volume 4. I do not have volume 4 at my office today, so I can only speculate on how much additional detail might be included over volume 2, and what detail might be missing that would appear in the full test reports. In terms of volume, I recall being told that there were about 15 file drawers full of the full test reports at TRC.

The results (maybe concentration and flow rate and process thruput) of each run were maybe summarized in volume 4, then single averages of the resulting emission factors show up in volume 2 and ap-42. I would guess that a single page in volume 4 describing a test series in general, followed by a single page in volume 4 showing the individual run concentrations and flow rates, would be backed up by a test report 2 or 3 inches thick, containing the actual data sheets and observations taken during each day of a 2 or 3 day test, covering 6 to 10 different rubber compounds run thru a single piece of equipment. The test report would also contain the weights of the process materials loaded, the collected sample weights of the pollutant stream, the results of the lab analyses, the calibration sheets for the instruments, and an example of each type of calculation that had to be made to get from the raw GC results to a lb/lb emission rate.

>>> "Tracey J. Norberg" <tracey@rma.org> 10/06/98 06:53pm >>>
Ron -- Thanks for the e-mail. You mentioned in our phone conversation that you have raw data in addition to the TRC report. Exactly in what form is the raw data you have? How is that raw data different than the individual full test reports that you seek?

We are committed to helping you finish this project. I'll be in touch after we've had a chance to analyze the tables you sent. Thanks, Tracey

From: RON RYAN
To: RTPMAINHUB.INTERNET."tracey@rma.org"
Date: 6/9/99 10:19am
Subject: Web posting revision-draft section 4.12

Tracey,

the updated tire curing and calendering emission factors have been posted on the web (http://www.epa.gov/ttn/chief/ap42dsur.html), both as individual files and as part of the complete zipped section file. Attached read me txt file is also posted, and explains the revisions made. Note that I took this opportunity to revise the names of some of the HAPs in the tables to use the synonyms as listed in the CAAA of 1990, and sorted the tables alphabetically by these names. I plan to do this to the other 7 processes when converting the wordPerfect drafts to Excel finals as well, unless you see any problems.

From: RON RYAN
To: RTPMAINHUB:RTPMAINHUB.INTERNET:"tracey@rma.org"
Date: 10/6/98 5:34pm
Subject: AP-42 -Reply

Tracey -
attached file is a lotus spreadsheet showing the results of picking 26 emission factors picked at random from the draft AP-42 section and trying to find where they came from in Volume 4 of TRC's report (data summaries) and volume 2 of TRC's report (raw data). I have not yet tried to find a pattern to the mismatches, considering the changes that have been made to some of the final emission factors, but there are several questions here to resolve.

In addition to doing these comparisons to the two sections of TRC's report, we would like to also try to track from TRC's report back to the individual, full test reports. We would like to first establish that there is some way to tie back to the full test reports (no test report numbers are apparent in TRC's report), and then we would like to spend several days reviewing a (hopefully) small percentage of the full reports to verify that they support the values in TRC's report. After you reminded me today of some of the history of different parties re-calculating results after TRC, I am afraid that this last step is more critical, will need to be coordinated with more people, and will result in us needing to document the thread of calculations as a replacement to portions of the TRC report in several instances. I will have my contractor proceed with more comparisons to see if we can refine the scope of what is needed, and I will be in touch about how we might begin what might be an arduous task.

>>> "Tracey J. Norberg" <tracey@rma.org> 09/15/98 02:10pm >>>
Dear Ron: I wanted to get in touch with you and find out how you are doing with finalizing the AP-42 section for the rubber industry. Last we spoke, you were hoping to finalize the section by the end of the fiscal year.

Since RMA submitted comments on the draft section, some of my members have had the opportunity to continue using the factors, and have noted some additional edits.

1. On page 4 of the comments, we advised the EPA of some discrepancies in the Tire Curing emission factors. Item 1 of the Tire Curing section indicates that the 2-Butanone factor for Tire E should be 0.95E-07 instead of 0.96E-07. This should be 9.05E-07 instead of 9.06E-07. This error is due to a typing transposition on the comments filed by RMA.

tire curing ers were later inc. by wt. of 16.67% due to mesh wt.

2. On the redline version of page 4.12-17 that was attached to the comments there is a description of the calendering operation. The first paragraph in the center of the page is "Calendering is often used in the rubber manufacturing industry to apply a rubber coat onto continuous textile or metal mest web." The word "mest" should be "mesh".

3. On the redline version of page 2-2 that was attached to the comments there is a discussion of the general materials involved in mixing rubber. The fifth paragraph on the page addresses sulfur compounds. The last sentence of this paragraph does not make sense.

4. In the redline version, while there is a description of tire curing operations and how to use the tire cure factors, there is no explanatory information about the two other types of curing factors -- autoclave and platen press. RMA is willing to provide additional narrative for use in the documents, if it could still be included in the final document.

Please email me back or call me at 202-682-4839 to discuss the timing for the final document and the points outline above. Thanks.
Tracey

You may want to pass this information on to the EPA.

Tom

RR 3/21/97

NOTE TO FILE

202-682-4839

615-872-1424

RE: RMA Conference call, 3/21/97 1:15 pm to 1:40 pm
Attendees: Ron Ryan, EPA, Owen Drey, RMA, Nancy Ray Jandrocovic, Goodyear, Alva King and Jim McAdoo, Bridgestone.

Purpose of call was to straighten out RMA's text submittals for the RMA draft AP-42 section in order to get the material out for review. Nancy straightened out file nomenclature questions by saying two documents were prepared - a short version and a longer version. I take short version (file VOL2.1) to be the AP-42 section, and the longer version (4 files, VOL1.1 thru VOL1.4) to be the background report. I will need to straighten out the page numbering/section numbering/file naming confusion. Nancy and Alva confirmed that no figure was missing on pg 2.1-17 of VOL2.1 (will rename with BBS section name convention). Nancy recommended dropping the paragraph on pg 1.1-5 of VOL1.1 that refers to Table 1-1, and drop the references to "means and maximas" in section 2.5 of VOL1.2. I confirmed that the ef tables should be appended to VOL2.1 to form the AP-42 section (note there is no reference to the tables in the text, and no table numbers). I created Table 4.12-3

TRC is maintaining the raw data files - there are 13 file cabinets full of reports. Nancy is finishing up a detailed electronic database which will be sent to Owen at RMA. In addition Nancy pointed out the 4-volume summary report that was delivered to me earlier. She does not have any problem with EPA seeing either the database or the raw test reports. She did not want the material being distributed outside of EPA or state agencies, however, because only some of their companies paid for or contributed to the study. Alva pointed out that whatever goes into AP-42 is usable by all, but Nancy added that they had tested for pollutants other than EPA HAPS and criteria, and that these were not in the AP-42 section.

Actions - ron r to edit and put on BBS. Call Alva for list of state contacts to alert, along w/RMA when it goes on BBS. I can call Nancy if any questions of significance come up as I am editing text.

2-25-97 Sent Text & Extruder files to Ron29 @ ix.netcom.com
4-16-97 Sent e-mail of Text & Tire Curing, Autoclave, & Platen Press to Laura Taylor @ GA DNR
6-10-97 Sent e-mail of Text & Mixer Files to Darren Machuga @ OHIO EPA
6-18-97 Sent e-mail of all Tables & Text to Owen Mancarella @ FLA DEP
" " " " " " " " " Brent Luebbe @ NEB DEQ

Files on A:

WP6 Files

call Nancy if any ?s on text

✓ I'll edit, put on BBS
✓ any cos. to notify
Alve or Owen

VOL 1.1	6-24-96	2:56pm	28,382
" 1.2	6-24-96	2:32pm	60,335
" 1.3	2-13-96	9:56am	32,707
" 1.4	2-13-96	10:09am	12,267
" 2.1	6-25-96	7:55am	61,384

BACKGR
pgs. 1.2-1 → 1.2-19 (dated 2/96)
sub sects. 2.1 → 2.5

pgs 2.1-1 → 2.1-17, (dated 2/96)
sub sects 1.1 → 1.4
(pg. 2.1-15,16)

MINE vol 1.2a - 2/26/97 4:09pm 4665 ← Bridgestone/Firestone & Jim McAdoo

3-21-97
RMA call-in #
703-736-7319

Alva King - Bridgestone/Firestone
Nancy Ray, Andricevic - till 1:55
Owen Drey

VOL 2.1, dated 6/25 (61K) Looks Like replacement(?) for VOL 1.2 (6-24 60K)

"EMISSIONS FACTOR DEVELOPMENT APPROACH"

6-25-96 7:55am
VOL 2.1 (17pgs)

1.1 Gen'l Process Desc. (26 Formulas)
1.2 Equip't Scale Considerations
1.3 Emissions & Ctls. (pg. 2.1-15)
1.4 Emission Factors
(stuff from orig. draft)

pg. 2.1-17 EF Dev. Approach Figure ? Missing
(prob. not)

6-24-96 2:32pm
VOL 1.2 (19pgs)
← used for hard copy sent by Dale

2.1 Gen'l Process Desc. (26 Formulas)
2.2 (Same)

More Like Background
2.3 Selection of Compounds & target Pollutants (pg. 1.2-15)
2.4 Descr. of Sampling/Analytical Regimes
2.5 Dev. of Final Factors

Says efs reported as point est, means & maxima

What refers to TABLES?

VOL 1.1 INTRO
Prog. overview & Obj.
EF prog. defns.
EF Summary
Table 1-1 missing? pg. 1.1-5 ref. by pg. 1.1-4 EF Summary

VOL 1.3 DESCRIP OF TEST FACILITIES

VOL 1.4 Data Analysis & Disc. of Results

RUBBER MANUFACTURERS ASSOCIATION

October 23, 1996

Ron Ryan
US EPA
MD-14
Research Traingle Park, NC 27711

Dear Mr. Ryan:

Please find enclosed the Rubber Manufacturers Association submittal to AP-42, the emission factors for the rubber manufacturing industry. I am sending you paper and disk versions of the information. As we discussed, I look forward to seeing this information on the EPA bulletin board within the next month. If you have any questions, please call me directly on 202.682.4839. Thank-you.

Sincerely,

Dale A. Louda, Jr.,
Regulatory Affairs Manager

Enclosures - 10 disks "ENSR CONTRACT 9-2576" -3 files - SEND BACK TO DALE
"G4 Akron EPA Doc AP-42 Verbage Vol 1.1 1.2 1.3 1.4 2.1 (OUTLO)
MATCHES w/page #'s
1.2 & 2.1 Differ @ back end
Table 1.1 missing ?
SECT #'s → 1.1 2.1 3.1 4.1 a repeat of 1.2 w/#'s revised
1.3 2.5 3.5 4.2

-TEXT : Text Piece + 9 packets of tables (No Disk for "Grinding" table?)
(1) ENSR Contract
(1 Vol 1 2 vs. 2.1 ? pg. 15→
(2) ~~Fig~~ Table 1-1 - is this all Tables? Fig missing on 2.1-17?
(3) are these sections intended as AP-42? - or other doc. for indust members?
does not look as much like AP-42 as last draft
(4) Terms later given HDS? - pg. 1.2-18 still explains "L". No Footnotes
(5) Formaldehyde?
(6) [illegible] of solvent Losses?
↑ It's on Disk w/ Extruder

1400 K STREET, N.W., WASHINGTON, D.C. 20005 • TELEPHONE (202) 682-4800 • FAX (202) 682-4854

From: RON RYAN
To: RTPMAINHUB.INTERNET."ron29@ix.netcom.com"
Date: 2/26/97 4:20pm
Subject: Rubber Manuf Association data

attached files are WordPerfect6 files of all the text received from RMA. The file names seem to put the total document together in order, but the section numbering is dyslexic from the file names, i.e., file "VOL1.3" contains sections 3.1, 3.2, 3.3, etc, while "VOL1.4" contains sections 4.1, 4.2. The page #'s, however, seem to match the file naming convention. Also, I have created a small file, "VOL1.2a", which has some potentially useful material which appears to follow "VOL1.2". However, the section numbers in that file are 1.3 and 1.4, and they should be 2.6 and 2.7 in order to follow the order of the other files. Sorry for the confusion - I have not straightened these RMA submittals out yet for general distribution.

RMA
Owen Drey
682-4839

call Thurs

Nancy Roy
Goodyear - safety & health

Alva King
Bridgestone/Firestone
615-872-1424

3-2-97 & decon

TRC has official database - hard copy @ TRC 13 file cabinets

Nancy has all base info

Alva suggests RMA be custodian of - no - TRC will maintain.

RUBBER MANUFACTURERS ASSOCIATION

November 14, 1996

Ron Ryan
US EPA
MD-14
Research Triangle Park, NC 27711

Dear Ron:

Enclosed please find revised versions of the RMA AP-42 submittal. Please direct your questions to Kim Weber at the RMA on 202.682.4835, since today is my last day at the RMA.

She called 12-9-96

Sincerely,

Dale A. Louda, Jr.

I mentioned
① Q's - NDs - (see over)
② solvent language intro
③ footnotes missing/not tied - need details
& that next step was comments - next publishing
Nancy @ Goodyear is chairperson committee
Toss contract disk

sect 1.2 pg. 14

mixer partic # was wrong - forget to convert grains

extruder data - based on extrapolation of

Mike Davidson @ Ill. EPA called 12-9-96
Increased CS_2 emissions by 7 fold
Vulcanization process EPDM rubber

Nancy Jandracovic called 12-9-96 1PM -
what changes do we need to make?

1400 K STREET, N.W., WASHINGTON, D.C. 20005 • TELEPHONE (202) 682-4800 • FAX (202) 682-4854

2 ways to get a zero

1) never found -

2) multiple runs - all three below detect

if > detect on any one, →

get Elec. spreadsheet from PMA-set C:\"callrma"

get Diskettes back

Develop a table of | Equip't type | rubber cmpds tested | test set-up (pilot? production?) | #runs/cmpd |

Develop a table of test methods used?

1. AUTOCLAVES (2) — AP42, ALL 3
2. Calender (4) — AP 42 off 3 of 4; ok on COS.
3. changed ?Exonder (3) — ALL 3 OK
→ 4. ? Grinding (2) — ALL 3 BAD
5. Hot air cure (3) — VOL 2 BAD on 2/3
6. Int Mixing & Milling (3) — ALL 3 OK
→ 7. Milling (3) ALL 3 OK
→ 8. Platen Press (3) 2/3 OK — vol 2 bad on 1
9. Tire Cure (2) ALL BAD
~~10?~~ " " / tire press (1)

26

GET SPREADSHEETS

31 Files of EF tables

9 types of Equipment

- (4) MIX = Int. Mixing & Milling
- (4) MILLING
- (4) Extruder
- (4) Calendar
- (4) Platen Press
- (4) Autoclave
- (4) Hot Air
- (2) Tire Cure
- (1) GRINDING

~~email~~ who wd like to see in perfect world

extruders Nov '96

(grinders?)

calendar | June '97

RMA checked #P-42 vs... these updates

Toluene & Methylene Chloride way high

updates due to

Carcass Grinding

Dave Clark Michelin

(NC issue)

– testing this late year

84-88 16+?
18+
D-91 +8
30

Look @ biggest cmpds?

which RMA data?

① repres. of metals; organics; VOC; semivolatiles
" " all processes
" " diff. sizes
" " averaging schemes → processes w/ HD'S & 3 runs

② cover problem areas ID'd by PES < FIND PES & MY SPREADSHT

③ what % of data to check

④ Tire Retreading comparisons ⑤ Tire grinding Toluene, M/C

PROCESS	# rubber cmpds	# runs	(size, prod)	Metals / org / VOC / semi

all 30K 1. Int Mixing (MIX) & Milling } least cmpds ← INTERPOLATIONS BASED ON THIS - All cmpds, All Analytes

all 30K 2. Milling

was changed → 3. Extruder

→ 4. Calander

bad * 5. Platen Press

6. Autoclave

bad * 7. Hot Air

* 8. Tire Cure

bad * 9. Grinding

vol I, pp1-5

pp. 2-8

Table of interpolation avg. bases & ranges

From: Tracey Norberg <TRACEY@rma.org>
To: RTP10.RTPTSD(RYAN-RON)
Date: 4/30/99 3:17pm
Subject: Updated tire curing and calendering factors

Fixes Math error - each value was counted twice - efs came out exactly 2x what they should have been.

Ron - As you and I discussed yesterday, attached are the updated spreadsheets for tire curing and calendering emission factors. The updated calendering factors ~~utilize the averaging assumptions that we discussed with you in January, and are consistent with the emission factors that are currently on the EPA website for the other rubber manufacturing operations.~~ The updated tire curing factors are corrected to express the emission factors in terms of pounds of emissions per pound of rubber. The previous version of the factors did not correct for the weight of a tire that is not rubber. *14.5 to 20.5% incr in each ef (avg 16.7%)*

I appreciate your prompt assistance in posting these updated factors to the EPA internet site next week. If you have any questions, please contact me at 202-682-4839 or via return email. Also, could you send me a note or give me a call as soon as the factors are on the internet? Thanks!

tir_5_99.xls — 29KB
~~Tire Cure.XLS~~ - 2pp — ~~57KB~~ — prints 1 ~~2~~ pages — 6-7-99 ~~5/4/99~~
~~CALEND.XLS~~ - 6pp — ~~tiremine.XLS~~ ~~80KB~~ — prints 6 pages — ~~5/18/99~~
CAL_5_99.XLS — 59KB — 6-7-99

tire Cure.upd - 2 files
Table 4.12-11 — 91KB
56KB
(147) — prints 6 pages

Calender.upd - 4 files
158 KB
158 KB
148 KB
102 KB
(566) — prints 16 pages

✓ (1) change 0's to ND-? or <? - see our TRC, & add footnote

✓ (2) put xylenes together - capitalize? 1,2, dichloro --

✓ (3) rename "VOC" or add footnote

✓ (4) write up addenda note for web - what changes, why & List-serve announcement

✓ (5) re-zip all files

- change names to CAA capitalization, specify - sort by HAP, no 0, m f.
- < 5
- move units to TITLE - 12 pt, 10 pt, ... font
- shut off grid lines; use "borders"
- VOC → "H2S organics"
- Total other HAPS - points out no metals
- put date, file name, # in footer

6-12-95

RM# Mfg review

(1) Ron R. to mark-up & comments on proposed section by July 4 to Dale L. - point out treatment of non-detects - need to add guidelines - maybe add John Finn's figures?

(2) Dan Pyanowsky may be trying to rewrite the old section as an intro, to address solvent losses (Include text on same, small double-counting

(3) Ron R- check old sections "Rubber validities" #'s, point out for States review?

(4) Dale to tell me State contacts - Ohio, #'s big states, Md, Mich waiting for data

(5) YRC still has raw test reports & electronic disks

(6) Dale - earlier telecon mentioned some formaldehyde data not ready yet - is it in there?

(7) Ratings?

(8) Storage of test data

*(9) Need to get written permission to reproduce, see Vol. IV cover page

Dave

✓Vol 4 vs. section? = Vol (?) 2? NOT BY AUG - put out as unrated

[Document Test Protocol / New Test reports? $ (Ratings) ← CONFIDENTIALITY

Who's formatting instructions

Procedures Appendices

X IS sect. only applic to Tires?

SOLVENT SOURCES

Gates & Goodyr make other products

TRC has original test reports - will go to RMA by end of summer

only w/ Tire co. names being Blinded

how many tests per factor? ✓background

do factors include all fugitives? - Descriptions of source test setup

did they exclude all solv. emissions? No - couldn't

need explanations of each process ✓

4 vol. report OK.

raw test reports?

~~full-size equip - in factory?~~ Scale-up

pro

Curing - enclosed area where forming cooling

John Finn

23 rubber formulations - believe 98% of industry covered

1-7 Tire
8-23 engin. prod. } roughly

9 diff. types of tires tested
Avg = 2.3 × 10⁻⁴ VOC-lbs/lb
~1.8 → 3.2

~~Are factors per lb product from each step?~~ - is there much difference? Yes

No after mixing about 2:1 to rubber crumb

~~Ernie~~

N.D.s - added in at full detect limit

TRC to turn over disks to RMA in next

My comments by July 4

maybe back in Aug, next day on BBS

"ADD PROCESSING AIDS" BY MASS BALANCE

Copies of Dan's calcs

Copies of John's overheads

for
500-250 million lbs/rubber plant
get 60-70 tons from rubber (those sources)

1000 tons use pre-NSPS (solvents)
down to 100 tons now (from solvents) 1/50
& maybe 70 tons (just from rubber)

Hexane, heptanes show up in these

Tire Curing
70-75% of HAPS are toluene, xylene, ethyl benzene - constituents
(1-2%) of solvents

Non-productive mix - everything except what makes it cure

~~Copies - Me~~ ~~JHS? BOT~~
~~Files~~ ~~Whit~~
~~Dave~~
~~(Eric)~~ ~~Letter ... Hunt/Seitz?~~

~~McAlister?~~

Eric Noble x5362 - left 2 long messages

Dave Beck x5421 - have copy ready for him on Mon?
(works for Fred D... thinks they will get the Tire Manuf. MACT assigned to them).

(change to lbs/1000 lbs)

issues - need better table format & WP/FL formats - Hilight Defaults?

(4) - need to cover solv. emissions/unpub. section up-front

(A) need to clarify VOC - critted Methylene Chloride in one table

- need SCCs assigned?

- what is productive vs. non-productive?

(2) - How do these apply to non-tire facilities as originally planned?

(3) - what States/people can they suggest as reviewers (USE BBS)

- Any trade names need to be purged? Confidential info? even in background?

(1) - Does this section meet industry's needs? How about States? & tire & others?

→ (A) Are Test Methods OK? no methane present
(McAlister)
adjusted for what MW?

what HAPs were targeted/analyzed for?

Need for simple background doc?

Can we get descriptions of the units tested? ~~# samples?~~ - controls? pilot or prod. scale?

How can we rate the data?

delete leading ø's in CAS

Need to be clear about where ESP's were used & where not

Can we add generic names to Cmpd. formulations (like Carbon Black?)

9-15-95 Telecon w/ Nancy Ray Vandrocovic - Goodyear Tire
216-796-5042

Questions on AP-42:

① Does Everything have to be in WP? Even Tables? They use Word for Windows, but Nancy will find WP-6.0 somewhere. They use Access dBase / Excel spreadsheet.

I said we would prefer having the section itself in WP, but that we could break tradition if necessary to use spreadsheets for the tables. ② For the background report (their Volume I), she wanted to know if we needed the whole thing electronically. They have it electronically, but it's just a question of size. I suggested it could be broken down into as many smaller files as necessary, including more leeway than in the section itself for using spreadsheets.

③ My request for units of lb/1000 or lbs/million, instead of lbs/lb. → it will not get rid of negative exponents (some are now 10^{-x}, will become 10^{-2}). We agreed to leave units in lbs/lb, & I will have to create VOC & PM values for AIRS in lbs/1000 or lbs/million.

④ Nancy has done the interpolations for some processes that were previously indicated in a footnote. ~~She~~ She would like to put the results right into the tables w/ a footnote indicating they were derived by interpolation, not from testing. OK by me.

⑤ My comment #9 on providing a summary similar to something shown on their overheads. She suggested showing VOC totals for different processes for a 30,000 tire / (day?) facility. Kelly Springfield was about twice that size. OK by Me

RR