

Hexavalent Chromium Exposures During Hot Work

API PUBLICATION 4629
SECOND EDITION, JUNE 2007



Hexavalent Chromium Exposures During Hot Work

Regulatory Analysis and Scientific Affairs Department

API PUBLICATION 4629
SECOND EDITION, JUNE 2007

WRITTEN BY
Jenny Crittall, CIH

EDITED BY
API Industrial Hygiene Task Force

SAMPLING CONDUCTED BY
Sid Hebert, CIH, CSP of ICU Environmental Health & Safety
Conoco Phillips, Inc.



SPECIAL NOTES

API publications necessarily address problems of a general nature. With respect to particular circumstances, local, state, and federal laws and regulations should be reviewed.

Neither API nor any of API's employees, subcontractors, consultants, committees, or other assignees make any warranty or representation, either express or implied, with respect to the accuracy, completeness, or usefulness of the information contained herein, or assume any liability or responsibility for any use, or the results of such use, of any information or process disclosed in this publication. Neither API nor any of API's employees, subcontractors, consultants, or other assignees represent that use of this publication would not infringe upon privately owned rights.

API publications may be used by anyone desiring to do so. Every effort has been made by the Institute to assure the accuracy and reliability of the data contained in them; however, the Institute makes no representation, warranty, or guarantee in connection with this publication and hereby expressly disclaims any liability or responsibility for loss or damage resulting from its use or for the violation of any authorities having jurisdiction with which this publication may conflict.

API publications are published to facilitate the broad availability of proven, sound engineering and operating practices. These publications are not intended to obviate the need for applying sound engineering judgment regarding when and where these publications should be utilized. The formulation and publication of API publications is not intended in any way to inhibit anyone from using any other practices.

Any manufacturer marking equipment or materials in conformance with the marking requirements of an API standard is solely responsible for complying with all the applicable requirements of that standard. API does not represent, warrant, or guarantee that such products do in fact conform to the applicable API standard.

All rights reserved. No part of this work may be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without prior written permission from the publisher. Contact the Publisher, API Publishing Services, 1220 L Street, N.W., Washington, D.C. 20005.

Copyright © 2007 American Petroleum Institute

 **Documents**
Document Sharing Hub

API FOREWORD

Nothing contained in any API publication is to be construed as granting any right, by implication or otherwise, for the manufacture, sale, or use of any method, apparatus, or product covered by letters patent. Neither should anything contained in the publication be construed as insuring anyone against liability for infringement of letters patent.

Suggested revisions are invited and should be submitted to the Director of Regulatory Analysis and Scientific Affairs, API, 1220 L Street, NW, Washington, DC 20005.

TABLE OF CONTENTS

Executive Summary	1
Methodology	2
Discussion.....	3
Carbon Arc Cutting (CAC).....	3
Flux Cored Arc Welding (FCAW)	4
Gas Metal Arc Welding (GMAW or MIG)	5
Grinding.....	6
Gas Tungsten Arc Welding (GTAW).....	8
Oxyfuel Cutting (OFC).....	9
Shielded Metal Arc Welding (SMAW or stick welding).....	10
Conclusions.....	12
References.....	12

List of Figures

Figure 1: Overview by Type of Hot Work.....	1
Figure 2: Overview by Base Metal	2
Figure 3: CAC Results Distribution.....	4
Figure 4: FCAW Results Distribution	5
Figure 5: GMAW Results Distribution.....	6
Figure 6: Grinding Results Distribution.....	7
Figure 7: GTAW Results Distribution.....	9
Figure 8: OFC Results Distribution	10
Figure 9: SMAW Results Distribution.....	11

List of Tables

Table 1: CAC Results Summary	3
Table 2: FCAW Results Summary.....	4
Table 3: GMAW Results Summary	5
Table 4: Grinding Results Summary	7
Table 5: GTAW Results Summary	8
Table 6: OFC Results Summary.....	9
Table 7: SMAW Results Summary	11